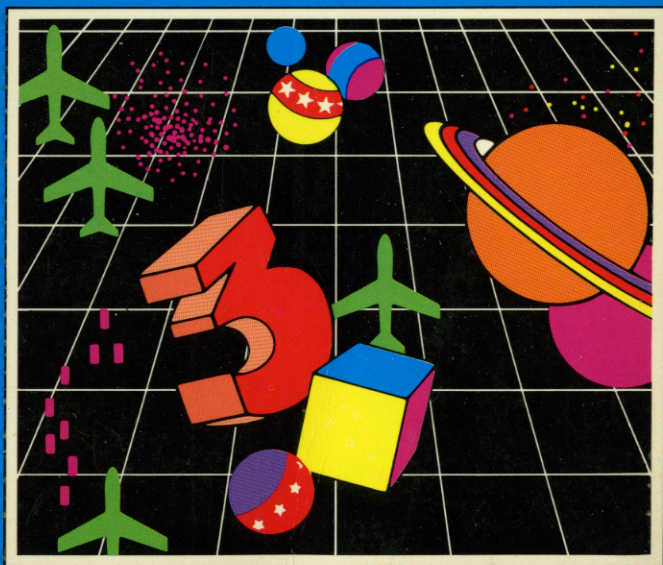NEW! JUST FOR YOU!
FUN, THRILLS, GAMES GALORE WITH YOUR OWN
AFFORDABLE, EASY-TO-USE COMPUTER!

THE KID'S GUIDE TO HOME COMPUTERS

DANIEL AND SUSAN COHEN

ILLUSTRATED WITH PHOTOGRAPHS

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THE KID'S
GUIDE TO
HOME
COMPUTERS

DANIEL AND
SUSAN COHEN

To Pat, Bill, Chris
and Tim Iannone

You Don't Have to Take Your Computer Seriously. Just Take It Home and Have Fun!

The time has come for you to enjoy your own home computer. There's a whole new line to choose from, designed just for you . . . computers that are inexpensive and easy to use. Now, find out where computers come from, how they work, and even what you can expect from them now and in the future.

Your computer can be the best fun you've ever had. You can play great action and adventure games, and more games than you ever dreamed of. You'll even be able to hook your home computer into telephone lines—a national network—to play computer games all across the country, and get all the information you need!

So get in on the biggest, most exciting, action-packed craze that everyone's talking about—kids' computers!

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THE KID'S GUIDE TO HOME COMPUTERS

CHAPTER 1

Bringing Home
Your First Computer

The day you bring home your first computer will probably be a day you will remember for a long time. It certainly was for us.

It's a little bit like bringing home your first new puppy. Before you got the puppy you read about the different breeds. You shopped around. You wanted every dog you saw. Each breed had its own particular charm. The decision was a hard one. But you finally did make a choice—though you were not entirely sure it was the right one.

Then the moment of truth arrived. You took the puppy home. Of course, you had read up on what to feed it. What to do when it cried at night. How to train it, and all the rest. You talked to other dog owners. Everyone gave you different advice. And when you finally brought the puppy home your friends and neighbors came around. They wanted to see what it looked like. Naturally you were nervous.
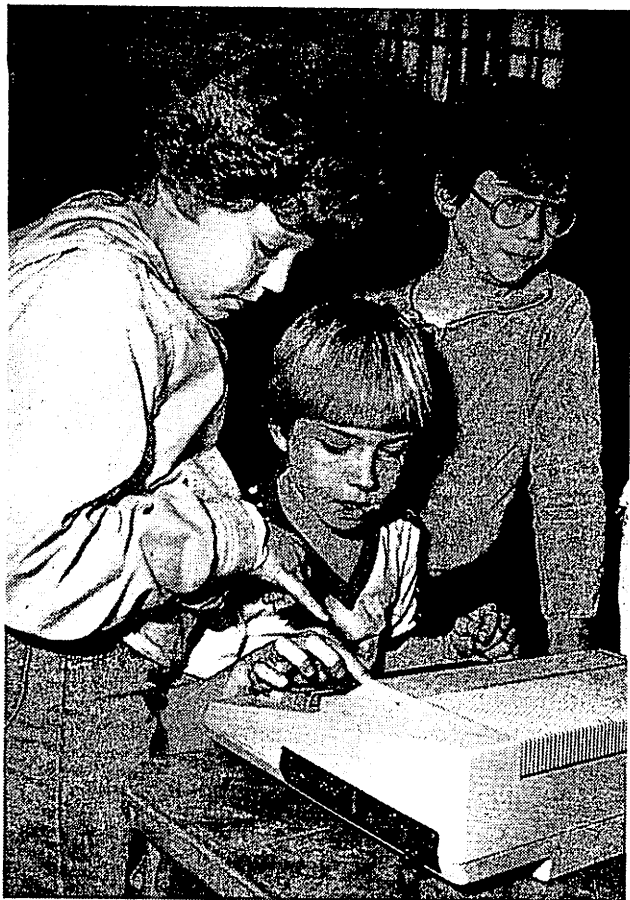
For us the business of getting a home computer was very much like that. We read up on computers. Shopped around. And finally made a decision. We chose the ATARI 800 Home Computer. Picking a computer, like picking a breed of dog, is really a very personal matter.

When we got the box home we were nervous. Just like when we brought our first puppy home. We knew, or thought we knew, what we were supposed to do. But would it work? There the similarity between bringing home the puppy and bringing home the computer ended for us.

We were told that to keep the puppy from crying we should wrap a ticking clock in a towel. But our puppy just cried louder.

We were given several foolproof methods for housebreaking puppies. We have also had several dogs that lived to advanced ages without ever being really housebroken.

We were told that certain types of toys would keep a puppy from chewing the furniture. We have had dogs that could destroy eight chew toys and a living room couch in a single afternoon.

Now, don't get us wrong. We loved every one of our dogs—noisy, dirty, and destructive as they were. It's just that they were unpredictable. They never acted the way the books said they should. That was part of their charm. Dogs are living things. They don't go by the book.

Computers are machines. They are supposed to go by the book. And in our case the computer did. It was wonderful!

We might as well admit it. We are not computer whizzes. In fact we find any machine more complicated than a can opener to be very confusing and frustrating. So we faced our first home computer with considerable uneasiness—actually with fear. What if it didn't work? What if smoke began pour-

ing out of it? What if it caused our TV to blow up? What if . . . ? What if . . . ? Worry is endless.

We opened the big silver box and took out something that looked like a small electric typewriter. That's the computer, the hardware, the console. There were a few additional pieces of equipment. And there was a slim—a very slim—guide telling us how to set up the computer.

First we had to disconnect the cable from the back of the TV set. Then reconnect it to the side of a switch box, and plug the console into the switch box. Then we had to plug a power adapter into a wall socket, and into the console.

The whole process took less than five minutes. That's because it was all very familiar. A little over a year earlier we had purchased our first Atari home video game. Setting it up was very much like setting up the computer. In fact it was *exactly* the same.

But we were a lot more nervous about the computer. Video games are games. A computer is—well— a very serious piece of equipment.

Would it all work? It seemed too easy. We switched the power on. The TV screen turned blue. And a small message appeared at the top of the screen: "ATARI COMPUTER—MEMO." It worked, just like the book said it would. And it was a breeze.

The next thing to do was to use the computer. We inserted a cartridge and instantly we were "marooned on the ice planet Kyybor watching legions of eerie creatures scream overhead. They hover ominously. Attack and destroy them—or be destroyed."

"Armed with a Laser Cannon. . . ."

Wait a minute! If that sounds familiar, it should. It's *Demon Attack*, one of the most popular home video games of 1982. It can be played on standard video game machines. The computer version is somewhat more colorful and has better sound effects.

Now, you may say people shouldn't get computers just to play video games. Computers are seri-

ous stuff. They do your income tax and your homework. They teach you French or algebra or the capitals of the fifty states.

Computers are supposed to be tough to operate. You can't just plug them in and play games. At least, you shouldn't be able to do that. You have to be "computer literate." You have to take classes and suffer a lot to use computers.

A computer is something you have to learn about, no matter how hard it may be. You have to take "computer science." If you don't you won't be able to get a job when you grow up. And all Western civilization will crumble. At least that's what it sounds like when you hear some people talk about computers.

With all that heavy responsibility we decided to be more serious. We took out the cartridge. You can't do too much with a naked computer anyway. You have to add things to it, things called peripherals. One of the best peripherals is a disk drive.

A disk drive is a little gray box with a slot in it. Into this slot you slip something called a floppy disk. This floppy disk gives you a lot more Ks of memory than a simple cartridge. And obviously that makes the computer a much more important and serious piece of equipment.

So we set up the disk drive. That took another adapter and more wires. By this time the room was littered with wires and boxes. Our poor TV set was beginning to look like Medusa just after she washed her snakes.

Setting up the disk drive took another five min-

utes, tops. We threw the proper switch. A red light went on, just as it was supposed to. The box hummed in a satisfactory manner. It was ready to go.

So we slipped in a floppy disk, waited a moment and then:

We were in the middle of a dark and gloomy forest. Three roads lay before us. One went north. One went south. And the third went west. Which road should we take?

Wait a minute! That's another game. Not an aciton game this time, a script adventure game. It's the kind you can't play on a regular home video game system or in an arcade but it's a game anyway. The player types instructions into the computer. The computer responds with words as well. That's why it is called script, or sometimes text adventure.

Perhaps the fact that we used our computer first and foremost to play games indicates a certain lack of respect toward these awesome machines. Well, fine!

Too many people still approach computers on their knees with fear and trembling. These people don't seem to realize that computers have changed a lot over the past few years. Today's home computers really are easy to use. They are also relatively inexpensive. And they can be an awful lot of fun.

Computers are no longer limited to superbrains, millionaires, and people who want to spend the rest of their lives working with computers. Today's computers are for everyone, even those who just

want to have fun with them. Don't feel guilty if you want a computer that is simple to use and fun.

Oh, sure, computers can be used for all sorts of serious work. And even a simple, inexpensive home computer can be hard to operate if you want to do certain difficult tasks.

Perhaps if you play with computers awhile you'll find you really like them. Then you can begin to go into them seriously. But you don't have to. Just playing around with a home computer will make you more familiar with how computers work. It will make you much more comfortable with them. That's bound to be helpful. Computers are going to become an ever greater part of all our lives. If you go to summer camp you'll probably get computer lore, along with Indian lore. We might just as well be comfortable with them. We might just as well have fun with them.

If you don't already have a computer in your home you probably will have one soon. Many experts believe that one day home computers will be as common as TV sets.

The aim of this book is to help you understand, use, and enjoy your home computer. Mostly enjoy it.

We know that computer manufacturers hate hearing anyone call a computer a toy. But a computer is a toy—or it can be. Probably the most wonderful toy ever developed.

CHAPTER 2

The History of Computers in 2,000 Words or Less

You may have noticed that your parents or other adults are a little nervous around computers. Maybe even a little afraid of them. Be patient and try to understand. Remember that many adults have had horrible experiences with computers. That's because computers were not always the cheerful, friendly little things they are today. Ten or twenty years ago computers were big and scary. They did terrible things to people.

Your first "hands on" encounter with a computer may have come in a video arcade playing Pac-Man™. That was fun. Video games changed an entire generation's attitude toward computers.

Your parents' first memorable experience with a computer may have come when one sent them a bill saying they owed the electric company $7,872.24 for one month's service. Then when they tried to explain to the company that it was a big mistake they were told, "Computers don't make mistakes."

You may have already worked with a computer in school—so you have some idea of what they can do. And what they can't do. Your parents may have grown up feeling that computers are mysterious and frightening. They were told that computers were smarter than they were. That it took a "genius" to run a computer. And that one of these days computers were going to "take over." That was all non-

sense, of course. It hasn't happened, and it won't happen. But a lot of people believed it would. The thought unsettled them. No one likes to be told that he or she is inferior to a machine. No one likes to be told that one of these days the machine is going to be bossing him around. The fear and misunderstanding that began in the early days of computers hang on in the minds and hearts of many adults.

Computers have really been around for quite a while. And they have changed a lot. The first real electronic computers were built back in the 1940s. That was during the time of World War II. They were used to help design and test different kinds of weapons. The first computers were enormous—a roomful of wires and tubes. They drew so much power that when they were turned on all the lights in the neighborhood dimmed.

Compared to today's computers they were terribly slow. It took these early computers seconds to do computations that can be performed in microseconds today. And every time an early computer had to perform a different task—that is, every time it had to be reprogrammed—it had to be rewired. That could take days. And tubes were always overheating and blowing out. That would mess up everything.

Still it was a beginning. Remember, the Wright brothers' first airplane flew only a few hundred yards.

After the war there was no great rush to buy computers. Though computers were being improved all the time, they were still very expensive

to buy and to operate, and they were not always reliable. The picture changed during the 1960s with the invention of the transistor. The transistor replaced the old vacuum tube. It was much smaller and more reliable. Transistors drew only a fraction of the power of tubes. And they didn't overheat.

During the 1960s a lot of very big companies began using computers for routine jobs, like sending out bills. The computer revolution began. Maybe it began a little too quickly. When many companies first switched over to computers a lot of things went wrong. There were, as they say in computerese, "bugs" in the new programs. That means a lot of them didn't work very well. The results could sometimes be pretty awful—like a $7,872.24 electric bill. Since most company employees were unfamiliar with computers, and didn't know what was going on, whenever anything went wrong they blamed the computer. Trying to correct a "computer error" could really be a terrible job back in the '60s. Dislike and distrust of computers grew.

For a while the more that computers got into people's lives the more irritating these machines seemed to become. A bill or any other piece of paper prepared by a computer was always filled with mysterious looking numbers or holes or both. They didn't mean anything to most people, but they meant a lot to the computers. People found that very unpleasant. It looked as if matters were being arranged for the convenience of the machines, and not the people. The computers really did seem to be "taking over." The world was being "dehumanized." Or at least that's what it felt like.

But all of this confusion, all of these resentments, were probably inevitable. Confusion and resentment come with every major change, and computers were certainly bringing about a major change.

While a lot of people were grumbling about computers, a lot of other people were busy making them better. And for computers better means smaller and cheaper. By the early 1970s, the microchip had started to take over the world of computers.

The microchip is a little, tiny piece of silicon. Silicon is a fancy name for sand. But the silicon used in microchips is ultrapure and prepared in the laboratory. Patterns of thousands of tiny grooves are etched into the chip. The grooves are so small that you can see them clearly only under a microscope. Yet these little grooves take the place of all the transistors and wires that were once needed in a computer.

Today, the electrical equipment that once filled a room and cost hundreds of thousands of dollars can all be put on a tiny bit of silicon, smaller than your fingernail, and costing only a few pennies.

Not too many years ago only the government or very large companies could afford computers. In those days computers were so delicate that they had to be placed in specially air-conditioned rooms. The microchip changed all of that. It brought computers out of the air-conditioned rooms and into the open. It reduced the size and cost of computers so dramatically that now practically everybody can afford one. And certainly everyone has room in his or her home for a computer.

The first personal computers, or home compu-

ters, were put on the market in the mid-1970s. They came as kits. The buyer had to put the computer together. You had to be pretty good with your hands to do that. The kits sold fairly well. Still the number of people who wanted such kits, or could use them, was limited. Most people don't want to build computers. Most people can't.

Some bright young engineers in California got the idea that people would buy a small computer that was already put together. They formed a company and started manufacturing small personal computers. They called their company Apple. One of the company founders had once worked in an apple orchard. Apple started on a shoestring. Today it is one of the giants of the computer industry.

Soon other companies were jumping into the home computer field. Tandy/Radio Shack had sold electronics equipment to hobbyists. They got into the computer field. So did Commodore, manufacturers of hand-held calculators. And there were more: Timex, Texas Instruments and Atari.

Atari reminds us of something else about home computers. The first home computer that most people had probably wasn't called a computer at all. It was called a video game. But all video games, whether they are home games or the arcade variety, are basically computers. They are computers designed to do one thing—play games—but they are still computers. Like the full function or "real" computer, the heart and brain of the video game is the microchip.

Now you can attach a joystick to a computer and play arcade-type video games on it. Or you can

The Apple II personal computer system

attach a keyboard to a video game and use it like a "real" or full function computer. The line between the video game and the computer can be a pretty hazy one today.

So you can see that the introduction you got to computers was a lot friendlier than the one most adults got.

And that brings us to another point. Most adults tend to be pretty stuffy about computers, even when they don't actually hate them. They think computers are "serious" and that they should be "good for you," and that if you don't know how to operate a computer you may have trouble getting a job in the future. Computers are treated a bit like medicine. You take it but you don't enjoy it.

Well, there is some truth in that. Computers are serious. Learning how to use them is probably good for you, and will help you get a job. But a lot of adults miss one essential point about computers. They can also be fun. We know that everyone says computers can make learning fun—and they can. But they also allow you to play the most wonderful games in which you don't learn anything—you just enjoy yourself. The most enthusiastic computer game players are usually computer engineers. They love their machines.

But you probably know all of that already.

There has been another development that has made home computers easier, more useful, and more enjoyable. It's "canned software." Software is another name for programs, which means a set of instructions given to a computer. Computers can be programmed to do all sorts of things—play a game, balance a checkbook, teach French, correct your spelling, whatever.

When home computers were first offered most users had to "write" their own programs. That was hard. Sometimes they were given step-by-step instructions on how a program should be written. That made the job lots easier. But any little mistake, any "bug" in the program, could ruin it.

Now there are literally thousands of pre-written programs or canned software available. The programs come on magnetic tape in cassettes, or on magnetic disks, or as chips inside a cartridge. (We'll explain the difference a little later on.) With canned software, you plug in the computer and use it.

Most programs have the instructions written right in. The computer will tell you exactly what to do, in an easy step-by-step manner. You don't have to learn any special "computer language."

That's what is known in computer jargon as "user friendly." Today's computers are certainly that.

CHAPTER 3

Almost Everything You Need to Know About Computers

It's not absolutely necessary for you to know how a computer works in order to use one. After all, you don't have to know how an internal combustion engine works in order to drive a car. You don't have to know how a stereo works to play it.

Not too many years ago you had to know quite a bit about computers even to dream of having one in your own home. You had to be able to put one together from a kit. You had to know about programming, machine languages, and lots of other things.

None of that is necessary anymore. Some day you may really want to know how a computer works. You may want to write computer programs and learn some of the advanced computer languages. That's wonderful. Computers are fascinating. A thorough knowledge of them can be very useful. But in these days of "user friendly" little

computers and tons of canned software you don't need to know an awful lot in order to use a simple home computer. Practically everything you need to know is in the manual that comes with the computer, or the instructions that come with the program.

Today's home computer is simple to use. Tomorrow's will be even simpler.

Still, if you know absolutely nothing about computers, there are some words and ideas that you should be familiar with. Without these words and ideas you may have trouble even with the simple instructions. You can learn to drive a car if you don't know how the engine works. But you'll never learn if you don't know what the steering wheel is. So if terms like floppy disk, 48K, RAM, and VDS sound like an alien language to you, you had better read the rest of this chapter. We'll keep it short. We'll keep it simple.

Basically a computer can recognize only two electrical signals. One is a high voltage pulse. The other is a low voltage pulse. When people write about computers the high voltage pulse is usually represented as 1. The low voltage pulse is represented as 0.

All the information (or *data*, the word preferred by computer experts) that goes into a computer has to be reduced to the digits 1 and 0. It is called the binary system because it uses only two digits. In binary language the number 36 is 100100. And the letter "A" could be 110001. Each 1 or 0 is known as a bit—which is short for *binary digit*.

Now you might think that handling all those 1s and 0s would be pretty confusing. But it's no prob-

lem at all for a computer. The computer is almost unbelievably fast, and it doesn't make any mistakes.

Most computers move bits around in groups of eight. Each group of eight bits is called a byte. Even very small computers handle thousands of bytes. So we have another abbreviation—K. K is short for kilo—or 1,000. Actually in the world of computers K stands for 1,024 bytes. So when you hear about a computer that has a memory storage capacity of 64K that means it can hold 64 X 1,024 bytes of data or 65,536 groups of 8 bits. You can get a lot of 1s and 0s in 64K.

While we are on the subject of memory we better tell you about ROM and RAM. ROM stands for *R*ead *O*nly *M*emory. That's the computer's permanent memory. And it's usually built right into the computer. It contains the instructions the computer needs to get going. What lights to turn on, what circuits to check and so forth.

RAM is a bit more complicated. The letters stand for *R*andom *A*ccess *M*emory. RAM is the computer's temporary memory. It will hold the program, and all the other data necessary for the computer to do whatever it is supposed to. But it only holds the data temporarily. As soon as you switch the computer off, all that information disappears from the RAM. When you switch the computer on again the RAM is empty, and ready to receive a new program and new data.

How does this programming information get into the computer? That's where the software comes in—the cartridges, cassettes, and floppy disks. If

you have a home video game system you know about cartridges. You just put them in and play the game. Inside the cartridge is a silicon chip that contains all the information the computer needs in order to let you play the game. It's a ROM chip. The information is permanent. It doesn't change or disappear.

But there is a limited amount of data that can be stored on such a chip. So most computers also get their programs from other storage devices. A few years ago the most popular storage device for home computers was magnetic tape on a cassette. This tape was just like the kind in your tape player. In fact, you needed a tape player to get the program into the computer.

Tape cassettes are still used in many home computers. But another form of storage has become more popular. It's called the floppy disk or diskette. It's a flexible plastic disk—like a small record. (It's called floppy because it's flexible.) The floppy disk is covered with a magnetic material that holds the data. The floppy disk and the equipment needed to use it are more expensive than a tape cassette and tape player. But the disk can also hold more information and is much more convenient to use. For the home computer the disk is the wave of the future.

Let's say your computer is all programmed and ready to go. How do you put data into it? With an input device, of course. The most familiar input device is a keyboard. It is very much like the keyboard of an ordinary typewriter. Sometimes the keys are arranged a little differently and there may be some extra symbols.
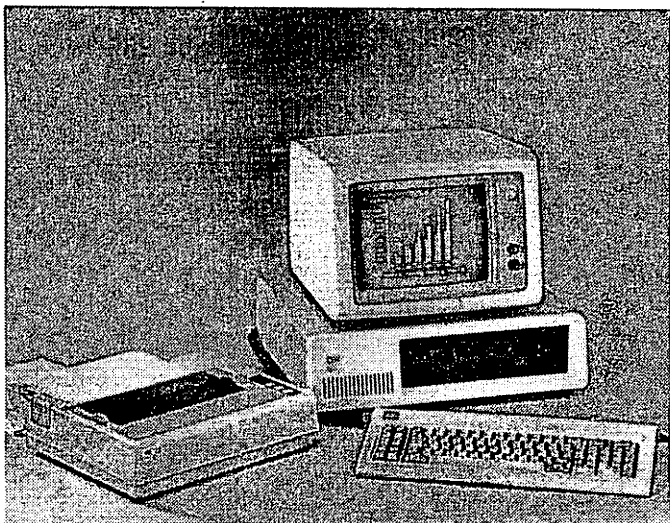
The new IBM Personal Computer with printer and VDS

While every full function computer has a keyboard, the input device that you may be most familiar with is the joystick. Not only do video games use joysticks, but standard computers use them for game playing too.

There are other kinds of input devices such as light pens for putting pictures into a computer. There are even some computers that can respond to a few simple voice commands. But voice-controlled computers are still experimental. You're not likely to have one of those in your home soon.

Now you have all your data in the computer. How do you get the results out? Why, with an output device, of course. And the most common output device is a VDS or *V*ideo *D*isplay *S*creen. That sounds an awful lot like a television set. And

with many home computers it *is* a television set. It's your family TV set doing double duty as a display screen for a computer. Home video games use the TV set, and so do most low-priced home computers. Some computers, usually the more expensive ones, have their own built-in VDS. When the screen is built into the computer or specially made for a computer it's usually called a monitor. The VDS can show words or pictures.

Another output device is a printer. Obviously, it prints its output on paper. There are even special printers that can make graphs or other drawings. There are devices called music synthesizers, which produce music, and speech synthesizers, which produce speech. Today's computers are better at talking than they are at listening.

A computer's output can also be stored on magnetic tape or a magnetic disk. Later it can be rerun in the computer. And it can be changed. When a computer takes information off a tape or disk we say it is reading. When it puts information on it is writing.

This isn't everything you need to know about home computers. But it gives you a pretty good start. Now let's look at some of the things you can do with your home computer. And some of the things you don't have to do.

CHAPTER 4

A Really Easy Chapter on Programming

If it hasn't happened to you already, someday somebody is going to tell you that writing a program for a computer is easy.

Baloney!

Of course, it's easy to write a really simple program for a computer. But you can't do much with that.

Here is an example of a really simple computer program:

10 PRINT "I AM A REALLY SIMPLE"
20 PRINT "COMPUTER PROGRAM"
END

What can you do with that program? You punch RUN into your computer keyboard, and if everything goes right you will find these words on your VDS:

I AM A REALLY SIMPLE
COMPUTER PROGRAM

Every time you punch RUN, the computer will repeat that message.

That's not very impressive. But, as we said, there isn't much you can do with a really simple computer program. In order to make a computer do something worthwhile, you have to be able to write a more complicated program. A much more complicated program.

You don't have to be a superbrain to write a more complex program. But it does take time and training and effort. You can do it. But it isn't automatic and it isn't easy.

Still it's useful to know something about how programs are written, even if you never want to write one.

Let's start at the beginning. A program is a set of electronic instructions that tells the computer what to do. Since computers are actually stupid the instructions have to be very detailed.

Now imagine a computer had shoes, and one of the shoes became untied. We know that sounds silly, but we're trying to make a point. Bear with us. It wouldn't be good enough to say, "Computer, tie your shoe." You would first have to tell the computer to bend over. Then tell it to grab the untied laces. Then to cross one over the other in a particular way. And to recross them, and so on and so on.

It might take twenty or thirty separate instructions to get the stupid computer to tie its shoes. And you would have to give those instructions in a form the computer understood. If any little step were left out the computer would be completely lost.

Once you got all of the steps right—once you had a program for shoe tying—then the stupid computer

could tie its shoes perfectly forever. And it would tie them in a fraction of a second—much faster than you can tie your shoes.

The whole series of instructions from bending over to tightening the laces would be "the computer shoe-tying program."

Programs are very logical. One step leads directly to the next. But just because a program is logical does not mean it is easy to write. By the way, making up a program is called *writing* a program. Using a program is called *running* a program. That's an important difference to keep in mind.

If one step in the program is not exactly correct, the program won't work. Even if you make a simple typing error you can mess up a whole program.

The number of ways a program can go wrong is absolutely amazing. All these problems are classified as bugs. Getting rid of them so the program can do what it is supposed to do is called debugging. Debugging can drive a person nuts.

Sometimes it can take months to write a program that runs only a few minutes.

Then there is language. You can't just write a program in everyday English. That won't work. Programs must be written in special computer languages. Computer languages have names like CO-BOL or FORTRAN. But the one that most home computer users will run into is BASIC. BASIC stands for *B*eginners *A*ll-purpose *S*ymbolic *I*nstruction *C*ode. It was developed in 1965 at Dartmouth University and it has really caught on. It is now the most widely used of all computer languages.

Many home computers now have a built-in ROM (remember that!) that allows them to understand BASIC. Most canned software for the home computer is written in BASIC. Most programming instruction is given in BASIC. The really simple example we gave at the beginning of this chapter was in BASIC. Unless you get very serious about computers BASIC may be the only computer language you will ever use. However, a newly developed simple computer language called LOGO is also popular.

BASIC is simple. Particularly when you compare it to most other computer languages. Mainly it uses familiar English words and symbols. PRINT means "print this out." RUN means "go ahead." END means "this is the end, stop." BREAK means "stop running temporarily." CONT means "start running again after BREAK."

It gets more complicated than that. But it always makes sense. BASIC almost always relates to something you already know. People have said that BASIC is easier to learn than Latin, but harder to learn than Pig Latin.

If your school has computer classes they teach BASIC. There are books and manuals to teach BASIC. There are even computer programs that teach you to program in BASIC. (The instruction programs themselves are written in BASIC.)

Some people love programming. They find it a fascinating challenge. Working out a logical program and getting the bugs out of it can be a great and wonderful game. People who love programming

have even got their own special name. They are called *hackers*.

If you love writing programs or think that you might, make sure the computer you buy can be used for programming. Most, but not all, can.

If you do love programming and find that you are good at it, you may be able to design your own computer games. And if you're really good you may be able to sell some of your programs.

Owners of Atari home computers can join in the Atari Program Exchange (APX). You write your own program and submit it for production. If accepted the program will be offered for sale in a special catalog. Atari often gives out prizes to designers of good programs for their computers. You may even win a substantial amount of money or an expense-paid trip. Computer games with a theme are particularly popular.

However, a lot of people hate the idea of writing a program. It scares them away from using a computer. And that's a real shame, because you can go through a whole lifetime using a computer and never write a single program. Just like you can go through a whole lifetime driving a car without ever having to repair your own transmission.

Computer books and magazines often contain printed programs which you can copy for your computer. These can be pages and pages long. Of course, any little typing error will wreck the program. Still it's a relatively cheap way of getting programs. And if you enjoy that sort of thing—dandy.

The fact is, most people don't enjoy that sort of thing. And they don't enjoy writing their own programs. But they think they have to know how to write or copy a program in order to use a computer. They don't. Yet the confusion hangs on.

Part of the reason for the confusion is history. When home computers first came out users did have to write or copy their own programs. There were very few pre-written programs available. With all the canned software available today that isn't necessary. Of course, when home computers first came out people also had to build their own computers from kits. They certainly don't have to do that anymore.

Another reason for the confusion is language. People who write programs often describe what they do as programming. But when ordinary folk hear that they have to program their home computers they panic. They think they are going to have to write a program. That's wrong. In order to program a computer you don't have to write anything. All you have to do is put a canned, or pre-written, program in and run it. Technically it is called loading a program.

In practical terms that means you insert a cartridge, cassette or disk, and punch a few keys. Then you wait until the program is "loaded." Cartridge loading is instant. Disk loading may take a few seconds. Tape cassettes are the slowest. Loading a cassette program may take a few minutes. But the user doesn't have to do anything. Just wait. The computer will tell you when it's all loaded and ready

to go. You have "programmed a computer." It was easy. The computer will probably also tell you exactly what you are supposed to do next.

So "programming" a modern home computer can be easy.

CHAPTER 5

What's Hot in Hardware

Hardware is the computer's physical equipment. It's the keyboard. It's the ROM and RAM and CPU (Central Processing Unit) chips, and the box that holds them. It's all the stuff that you would call "the computer."

Hardware is different from software. Software is the stuff you put into the computer to make it do what it is supposed to do. We'll have a lot more to say about it in later chapters.

When you buy "a computer" you buy the hardware. Some software may be included in the computer package. But at first the big expense is the hardware. The cost of home computer hardware can be anywhere from about forty dollars to several thousand dollars. It's quite a range.

Right now you have a great choice of hardware in home computers. A large number of companies make computer hardware. That number is growing

larger all the time. Each manufacturer's machine has its own particular advantages and disadvantages. Software made for one kind of computer usually will not work in another kind. Those important added features called peripherals that are made for one kind of computer will not work for another.

This is a polite way of saying that right now the computer field is a confusing mess.

Remember, the home computer market is only a few years old. There is an awful lot of money to be made from a home computer model that sells well. So a lot of companies have jumped in. Not just American companies, but some from Japan, Britain, and other countries as well. Companies that once put out only big computers are now making small ones. Companies that made video games, calculators, television sets or watches are making computers.

Everyone agrees that in a few years the home computer field will not be so crowded. Many of the companies now producing computer hardware won't be successful. They will drop out.

Hopefully, in the future there will be some standardization. When that happens software and peripherals will work in many different computers, rather than in just one kind, as is the case today.

And, of course, there will be new developments. Computer technology is moving so fast that there are always new developments. The computers you will be able to get in the future are probably going to be better, simpler and cheaper than the ones available today.

But you can't wait forever. You can't wait for the "perfect" computer. You want a computer that you can use now. And today there are plenty of good ones to choose from. We are going to take a closer look at some of them.

As we said, the computer field is a confusing mess. We can't possibly review all the available home computers. So we are going to look at the most popular and most easily available computers. And the cheapest.

The most popular computers are not necessarily the best. They are just the computers that are most widely used. That means they are the ones you are most likely to see in a store. And they are the ones that you are most likely to buy.

There is another reason for considering a popular brand of computer carefully—support, which means those extra services your computer may need. Or that you may need to help you run your computer. What happens if your computer breaks? You probably won't be able to fix it yourself. You will have to have it fixed. It's easier to get a well-known brand of computer fixed. Parts are more widely available.

Support also means information. What if you get your computer home and find that there is something about using it you don't understand? With the popular computers there is probably someone around who can help you out. That someone may be the person who sold you the computer in the first place. Or it may be a representative of the company that made the computer. Some companies provide a

toll-free number which a computer owner can call with questions and problems. And for the popular computers there are also loads of books and magazines on how to use them.

Then there are the peripherals. The well-known computers usually have a wider variety available.

And finally there is software. The well-known computers are likely to have much more software available. That just may be the biggest advantage of all.

So when you buy computer hardware, you have to consider a lot of things besides just the hardware itself.

Of course you must consider the price. In general, the more you pay for a computer the better and more powerful it will be. But a computer that costs $1,000 or more may be a lot more than you can afford. And a lot more than you need.

If you can afford a new IBM Personal Computer, and you can use it, great! But for most of us who are going to start by using our computer for running simple programs and playing games, we don't need anything that good. Or that expensive. You don't need a Rolls-Royce to drive to the movies.

Also think about this. A computer is not a diamond. It is not forever. If you buy a small, inexpensive computer now and find that you love computing—that's wonderful. Later you can think about getting something better, more powerful, and more expensive. By then you will know more about computers, and about what you like and want in your next one. And there will be new models avail-

able. You might be able to trade in your old computer. Or give it to someone who is just starting out.

Having said all of that we have to back up a bit. Remember, we said that in general the more a computer costs the better it is likely to be. You get what you pay for. So don't buy a particular computer just because it's cheap. You can always add peripherals to increase your computer's power. But if the basic hardware is not very good, you may just be wasting money.

So buying computer hardware is a balancing act. You have to balance what you can afford and what you really need, against what you want and what is available.

We won't kid you. There is so much good stuff available and so much variety that making a choice is going to be hard.

Here are some of the most popular inexpensive computers that you are likely to see at a store in your neighborhood.

TIMEX/SINCLAIR

The cheapest computer around is the Timex/Sinclair 1000. What with sales and rebates you can probably pick one up for around $40 or $50. That's a lot less than most video games sell for. The very low price is this computer's big advantage.

As you might expect it has some big disadvantages too. From our point of view the greatest drawback is the Timex/Sinclair 1000's rather small
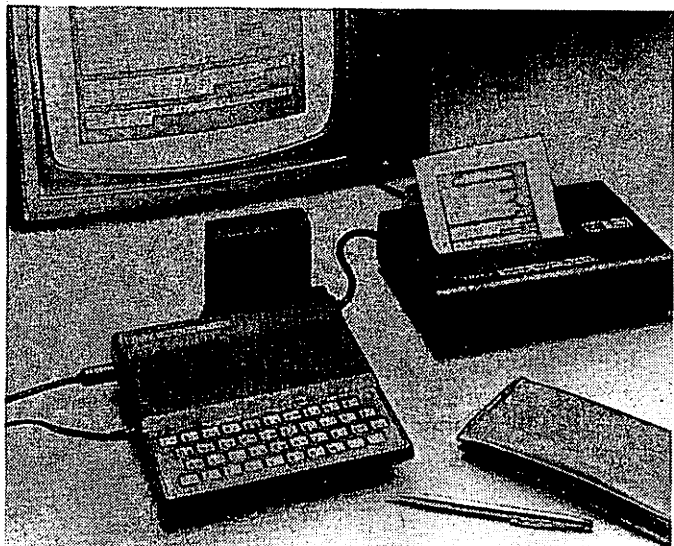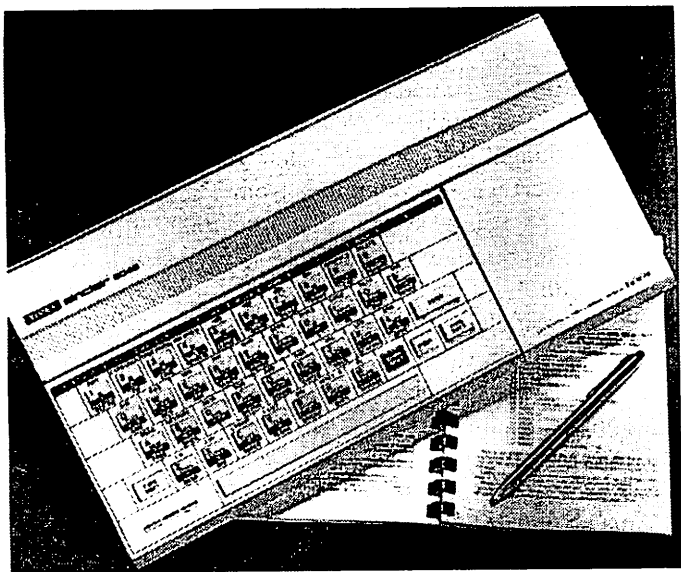
The Timex/Sinclair 1000 with printer
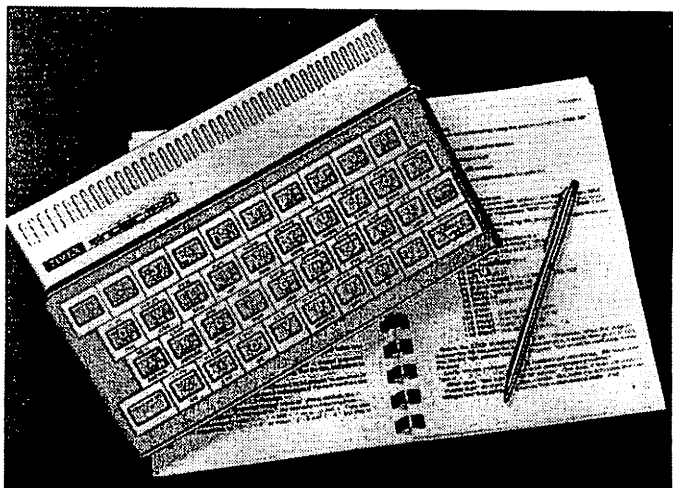
The Timex/Sinclair 1500

The Timex/Sinclair 2000

membrane keyboard. It's a flat, flexible piece of plastic with the letters and symbols printed on it. To hit a letter you just press the spot where the letter is printed. That makes it more difficult to type into than a standard keyboard with individual movable keys.

A second major disadvantage is the graphics. The Timex/Sinclair 1000 attaches to your TV set. But even if it's a color TV this computer can only produce rather blocky-looking black and white images.

There is a lot of software available for the Timex/Sinclair 1000. And there are lots of peripherals that can increase the computer's power and usefulness. Best of all it's a real computer—not just a glorified

calculator. For someone who wants to get his or her feet wet in personal computing and stay on a very limited budget the Timex/Sinclair 1000 may be the way to start. A new computer from Timex/Sinclair is the 1500. It is very much like the 1000 but has a regular keyboard with movable keys. It sells for under $80.

Timex/Sinclair has just started selling another new computer, the 2000. It also features a keyboard with regular, movable keys. The 2000 has color graphics, another big plus. There are two versions. The more powerful 48K version is selling for under $200. A 16K version is under $150. Once again Timex/Sinclair is providing just about the most inexpensive hardware around.

COMMODORE

Commodore was one of the early companies to bring out a home computer. For a few years sales lagged. Then the company scored a big success with its VIC-20, the surprise computer best seller of 1982. The VIC-20 has a full typewriter-sized keyboard, color graphics, and keys that let you generate sound. It was advertised as the first full function computer costing under $300. Now even that price is dropping. You can probably pick one up for $150 or less.

The VIC-20 can use plug-in program cartridges. But with the proper additional equipment it will also use tape cassettes and floppy disks. In fact, there is a good selection of reasonably priced peripherals available for use with this popular computer. There
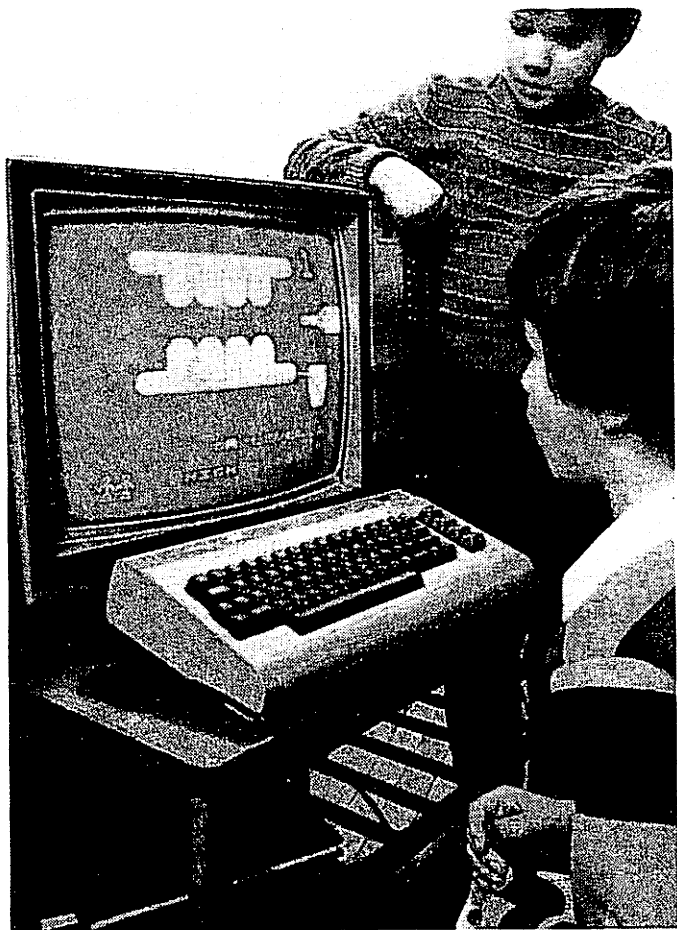
Courtesy of Commodore Business Machines, Inc.

is also a generous supply of software, including lots of great games.

Commodore isn't standing still either. Its new entry into the home computer sweepstakes is the Commodore 64/K. It can do more than the VIC-20, but it's more expensive. It costs around $600. Even so it packs the same memory capacity as many machines that are much more expensive. Some experts predict that the 64/K may be another Commodore best seller.

TEXAS INSTRUMENTS

Texas Instruments is the computer company advertised by Bill Cosby. You've probably seen some of their ads on TV. It's hard to imagine how you could have avoided seeing some of them. The company has been very aggressive in selling its computers.

Texas Instruments makes a lot of high-priced computers for business use. But it has gone after the home market in a big way. The best-selling TI home computer is the 99/4A. The computer is supposed to sell for about $450. But there are all sorts of rebates and discounts, so you can get one for a lot less. The 99/4A is designed mainly for use with plug-in cartridges. There are plenty of them available, and more are coming all the time. The 99/4A can also use tape cassettes and floppy disks, if you have the right peripherals.

The 99/4A has terrific graphics. But you get the full value of these graphics only if you have a

special video display unit. That can cost you as much as the computer itself. But it does give you much better graphics, and you don't tie up the family TV set. You can also connect 99/4A to the average TV set if you have an inexpensive bit of equipment called a video modulator.

Texas Instruments intends to invade Timex/Sinclair territory with a beginner's computer selling for less than $100. The company also plans to offer a wide range of peripherals and software for its beginner's computer. According to TI one of the main attractions of its new computer will be that it can use plug-in cartridges as well as tape cassettes and floppy disks.

TANDY/RADIO SHACK

Home computers are sold in special computer stores. They are now being offered in department stores, discount stores, even toy stores. But if you want to buy a computer made by the Radio Shack division of the Tandy Corporation you will probably have to buy it at a Radio Shack outlet. Fortunately there are lots of those around. Some discount mail order houses do offer Radio Shack products at reduced prices. But you have to search for such bargains. And you have to know exactly what you want.

Radio Shack offers about a dozen different computers. Two are of special interest.

Radio Shack's lowest-priced computer is the TRS-80. It costs about $300 and attaches to any TV

set. As with other computers priced in this range there is a lot of additional hardware that can be purchased to expand the use of the computer. There is also a fairly good supply of available software. One nice thing about this model, or any other Radio Shack computer, is that you know where you can buy the extras that you need and want. Radio Shack outlets sell only Radio Shack products. There is usually a good supply on hand. The salesmen know the products they sell. And repairs are relatively

easy to get. This is not always the case with a computer bought in a department store or discount store.

The TRS-80 Model III is the workhorse of this company's line. It has been around for several years now and has remained popular. It is a reliable machine with many uses.

This computer costs about $1,000. That makes it a good deal more expensive than the computers we have been talking about so far. But this sturdy little computer has something that the other computers we have been discussing don't have—a built-in video monitor. No need to hijack the family TV. No need to buy an extra piece of equipment. It's all there. And the graphics are sharp.

Because the TRS-80 Model III has been around for a while, there is a lot of software available for it. That also makes it attractive.

ATARI

Everybody knows Atari. The Atari company makes video games, arcade games, and both hardware and software for home video games. But Atari also makes computers. In fact, the future for Atari seems to be in the home computer market.

Atari's lowest-priced computer is the ATARI 400 Home Computer. The suggested price is around $300, but if you shop around you can get one for lots less. We have seen it for sale for less than $100!

This computer and all Atari computers start off with several big pluses. They have great graphics. There is lots of software available—particularly

Rich Tarbell

The ATARI 800 Home Computer

game software. You can't play Pac-Man on any other computer. Peripherals are widely available and reasonably priced.

There is lots of support too. Repairs are comparatively easy to get. There are Atari clubs, books, and magazines for real fans. All of this is very, very important, particularly to someone new to computers.

The big disadvantage of the ATARI 400 Home Computer is its flat membrane keyboard. But Atari is quick to point out an advantage of this type of keyboard. It's easy to keep clean.

A step up from the 400 is the ATARI 800 Home Computer. It has a full-sized typewriter keyboard. It's also more powerful. The list price on the 800 is $900. That doesn't mean too much anymore. With discounts and rebates we have seen it for sale for under $400. For those who want to use their computers mainly for game playing—but would also occasionally like to do other things, like learning programming—the ATARI 800 Home Computer may be a very good bet.

A new model is the ATARI 1200-XL Home Computer. It is more powerful and more expensive than the others. If you shop around, though, you may be able to get this model for less than $500. An attractive feature of the 1200-XL is the new "help" key. If you are running certain programs, and have a problem, hit the "help" key. The computer will tell you what to do next.

APPLE

The first computer that you own is probably not going to be an Apple. Not unless you have a lot of money. Apple computers are more expensive than the other computers we have been talking about. Even with discounts and rebates the Apple II, the most popular Apple computer, will cost over $1,000.
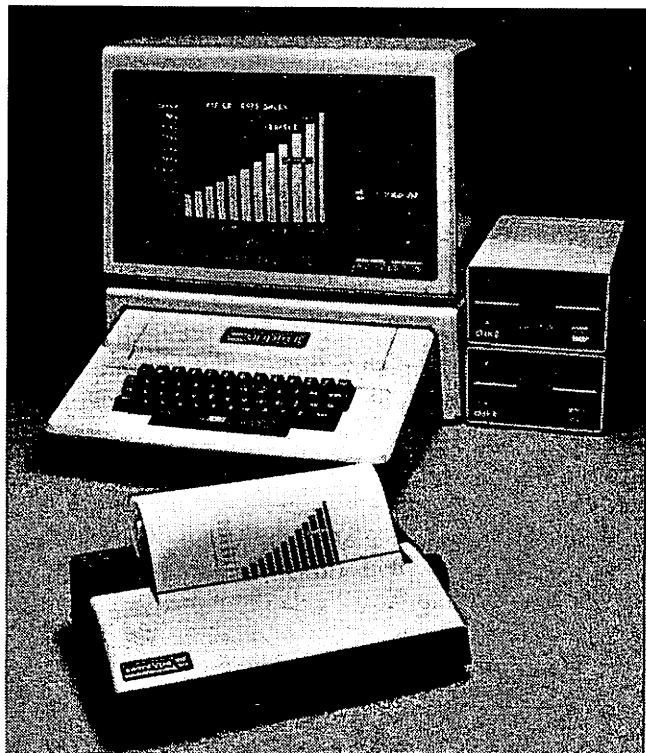
Courtesy of Apple Computer, Inc.

The Apple II Plus personal computer system

There are lots of good things about the Apple. But one feature stands out above the rest. It is simply that the Apple II has been one of the most popular home computers for several years. So there are lots of them around. Apples are sold and serviced at many places. There are plenty of good Apple peripherals. And most of all lots and lots of Apple software. In the area of games there is a great variety of script adventure games written for Apple computers. And these games are widely available in computer stores. For that sort of game playing nothing beats an Apple right now.

OTHER COMPUTERS

As we said earlier we only have space to cover the best-selling, least expensive, and most widely available home computers. There are loads of others with names like Osborne, Kaypro, Eagle and Northstar. Japanese companies like Sony are now making home computers for the American market.

You can build your own computer with a kit offered by the Heath company. The Heath computer is a bargain, but you had better be pretty good with your hands before attempting the job. It's not easy to build a computer, even from a kit. There are also portable computers that can be carried around in a briefcase. And even smaller hand-held computers.

A Japanese manufacturer is offering the Epson EX 20, a very small, very powerful computer. It has a full-sized keyboard and a little tiny built-in video display. The Epson EX 20 weighs only four pounds,
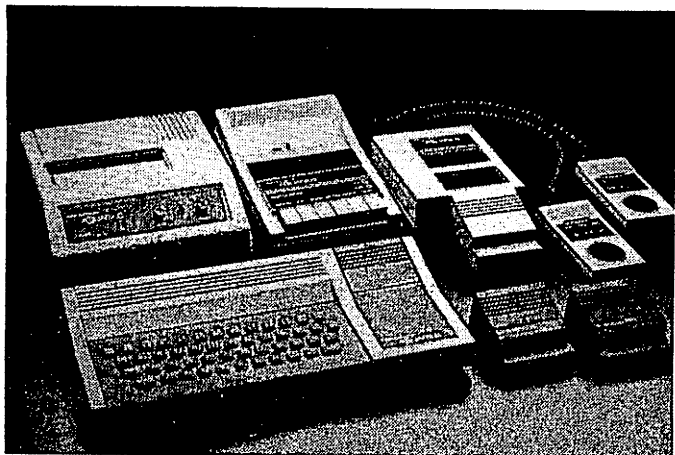
© Mattel, Inc. 1983

The Aquarius® Home Computer System

and is fully portable. This little computer was intro-
duced late in 1982. It costs around $800, and has
been selling very well.

IBM is the most respected of all computer manu-
facturers. The company makes all kinds of compu-
ters—mainly big, fantastically expensive ones.
IBM's smallest, lowest-priced computer is the PC
or Personal Computer. It costs over $1,500. But
IBM may be ready to jump into the small, inexpen-
sive computer market. When and if they do be sure
to get a look at whatever they put out. IBM has a
reputation for making fine machines.

Another new computer you might look out for is
Mattel's Aquarius™ system. Mattel, as you proba-
bly know, makes Intellivision™ video games. So
you can expect that Aquarius will have lots of
games as well as other software. Most of all Mattel
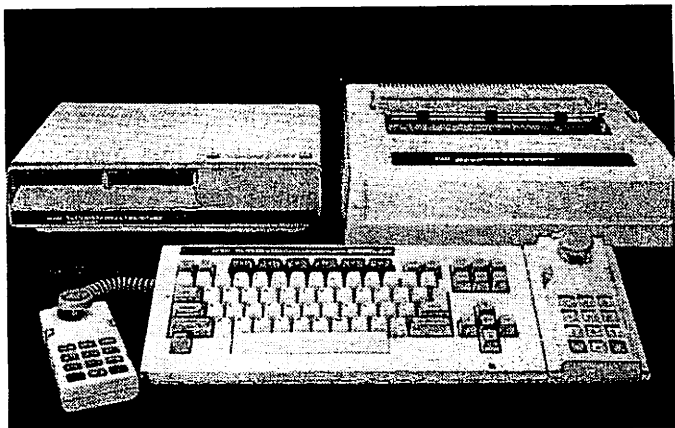
[COLECO]

ADAM, the ColecoVision® Family
Computer System

stresses that their Aquarius is simple to use. "Smart enough to be simple" is their slogan. Aquarius may be a good place to start, while you dream of Apple and IBM.

In June 1983 there was a big consumer electronics show in Chicago. Coleco made a big splash with a new computer called Adam. You probably know Coleco makes a popular video game system. Like most new home computers, Adam is simple to operate. But what really made other computer manufacturers sit up and take notice was the price—$600. Not cheap, you say. The difference is that Adam has a lot of built-in features and peripherals, like a printer, included in that basic price. Adam also will accept all of the popular ColecoVision™ video games, and video game controllers.

Coleco hopes that this sort of "package" will be

the wave of the future for home computers. Only time will tell. But early reaction to the Adam has been very good.

So, as you can see, there is a lot of hardware out there to choose from. And there is lots more to come.

CHAPTER 6

Peripherals—The Added Power

We have run the word peripherals past you several times already. Peripherals are those added pieces of hardware that allow a computer to do more things. In this chapter we are going to take a look at some of these "add-ons" that you will want and need.

One of the most popular and useful of the peripherals is the modem. We'll talk about that in the next chapter. Here are some of the others.

JOYSTICKS

The peripheral you are probably most familiar with is the joystick. A pair of joysticks is usually included right in the package when you buy a home video game. Joysticks, however, are not standard for most home computers. If you want to play action games on your computer, you'll have to buy a joystick or two.

The new Spectravideo Inc. Quick Shot® joystick controller
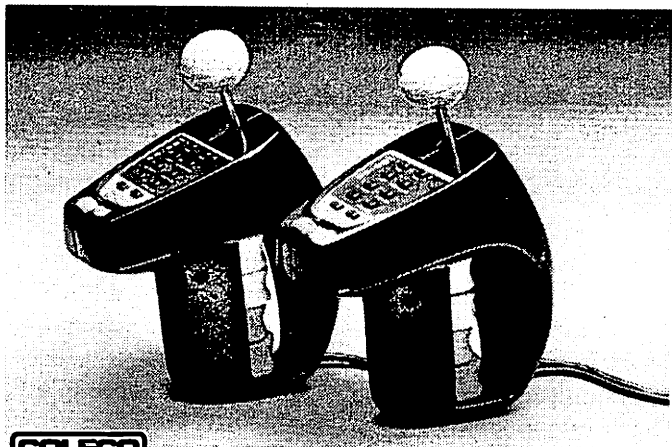
Coleco Super Action controllers

Joysticks were one of the weak points of early home video games. They were not very responsive. They broke easily. Fortunately joysticks have been improved. Not only do the game manufacturers like Atari and Mattel sell joysticks, a lot of independent companies are offering their own versions. These are often first-rate—better than those made by the major companies. There are also the new forms of controllers with names like the Roller Controller. The old-fashioned paddle controls are also needed for some computer games.

You have to make sure that the joystick or other controller you buy is compatible with your computer. That simply means that you can plug it in and it will work. Standard ATARI 2600 VCS joysticks will work with Atari computers. So will any other joysticks made for the Atari video game. Often the names of the video game machines and computers a controller will work with are printed right on the package.

CASSETTE TAPE RECORDER

You know what a cassette tape recorder is. You probably have one. Cassette tape recorders can be used for more than storing and playing music. They can also store computer software.

A few years ago most canned software for home computers came on tape cassettes. The software was loaded into the computer by a cassette tape recorder. Most home computers will work with any cassette tape recorder. All you will need is an inexpensive plug-in cord. A few computers require

tape recorders with special circuitry. The place that sold you the computer should be able to sell you the proper recorder. Before you buy, or try, anything be sure to check and find out what your computer requires.

There are a lot of disadvantages to tape. For example, it takes a long time to load. But there is one big advantage. It's cheap. There is still a lot of good tape software available. So you may want to look into adding a cassette tape recorder to your computer.

FLOPPY DISK DRIVES

Let's face it—tape is on its way out. The new thing for storing computer software is the floppy disk or diskette. It holds a lot more data. It's much faster to load. And you can find data much more quickly on a floppy disk.

The disadvantage is cost. Floppy disks are more expensive than cassettes. In order to use them you must have a floppy disk drive. That's an input device that plugs into your computer. You slip the disk into the drive. A good floppy disk drive can cost you as much as your basic computer, or more. Sometimes you need more than one disk drive.

You don't have to get a floppy disk drive right away. You can use a computer without one. But if you are at all serious about computing you will have to get one sooner or later. Many of today's advanced programs are available only on disks. All of the popular script adventure games and quite a few

of the better action games are also available only on floppy disks.

A bit farther down the road are the hard disks. These hold even more information and require a special hard disk drive. They are even more expensive to buy and use than floppy disks. Hard disks are already used in many office and school computers. But they probably won't be common in the home computer market for several years yet. So don't worry.

VIDEO DISPLAY MONITOR

Most inexpensive home computers hook up to the family TV set. For those just starting out in computing, that's fine. But if you are spending a lot of time at your computer, you had better start thinking about a video display monitor. That's a TV screen made especially for use with computers.

Many of the more advanced and expensive computers have a monitor built right in. But monitors are also available separately, as peripherals.

There are two good things about monitors. First, if you have one it frees up the family TV. Second, since they are made especially for use with computers they give a sharper image. Most monitors, however, will not give full-color images.

PRINTERS

Computers not only display words on a video screen, they can also print them out on paper. But for that you need another peripheral—a printer. A

printer will provide you with a permanent record of your computer's output.

Even the most inexpensive home computers have compatible printers. Printers start at about $150 and go up, way up. For those starting out in home computing a simple, inexpensive printer is fine.

But don't think that you are going to get pages that look like they came from a good electric type-writer. The quality produced by most cheap printers is poor. But it's good enough to start with. You can learn how to use a printer no matter how fuzzy the quality of the print.

Some people will find out quickly that they need a better printer. For others who don't need a printer very often, a cheap printer will be all that is neces-sary.

There are also special kinds of printers that en-able a computer to draw graphs and pictures. These are called plotters. A whole range of plotters is also available.

ADDED MEMORY

Most simple home computers have a fairly lim-ited memory capacity. Say you want to start run-ning programs that require more memory than your computer has. Do you have to throw away your computer and get a more powerful new one?

No. You can probably add memory capacity to the computer you already own. But be careful here. You can also get burned.

The simplest way to add memory is to plug in a memory cartridge. Computers like the VIC-20 and

Mattel's new Aquarius have this sort of memory expansion feature. So do many other computers.

Sometimes you can take your computer back to the store where you bought it, or send it to the manufacturer, and have additional memory chips installed.

You can also put in additional memory yourself. You may find ads in computer magazines telling you how to save a lot of money by doing this. The ads will assure you it's simple and foolproof. It isn't— so don't try it. The memory may not work, and you will probably ruin your computer in the process. If you can't just plug in the memory let an expert do it for you.

EVERYTHING ELSE

There are all sorts of other peripherals that we can only mention briefly. There are music synthesizers, which allow you to make music with your computer. There are voice synthesizers that allow your computer to talk to you. And there are also a few types of units available that are supposed to recognize speech, so you can give voice commands to your computer. Don't bother with them. They don't work very well.

Light pens do work well. They allow you to enter data into a computer by printing or drawing, rather than typing. But you can't just plug in a light pen. To use it you need special software.

As you can see there is a lot you can add to your basic computer to make it more powerful and versatile.

CHAPTER 7

When Your Computer Is on the Phone

You can get the latest news, weather reports and sports scores through your home computer. You can also get messages. And send them. You can even play advanced computer games without buying a cartridge or disk.

To accomplish all these wonderful things and many, many more, you need three things.

First, you need a computer. Obviously.

Second, you need a telephone. Practically every home has one of those.

Third, you need a modem. That's the device that connects the other two. It allows your computer to "talk" to other computers on the phone.

Modem stands for *mo*dulate/*dem*odulate. It changes the binary data that computers use—all those 1s and 0s—into signals that can be carried over phone lines. At the other end of the line there is another modem. It converts the phone signals

back into binary signals. Some modems can transmit and receive information at the same time.

If the word modulation sounds familiar to you that should not be too surprising. Modulation also takes place before anything can be broadcast over the radio. The M in AM and FM stands for modulation.

There are two basic types of modems. The simplest and cheapest is the acoustic coupler. It looks like a small box with a pair of rubber cups in it. When you want to use this kind of modem you just put your telephone handset right on it. The earpiece fits into one of the rubber cups. The mouthpiece fits in the other.

The second type of modem is called the direct-connect modem. It is installed between the phone jack in the wall and the telephone. You still have to
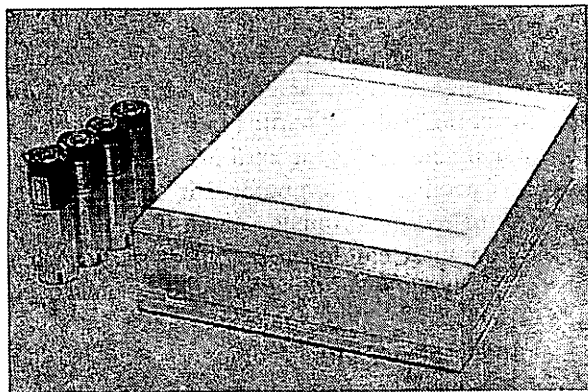
Courtesy of Texas Instruments

Texas Instruments's Modem

pick up the handset and dial for the computer. But after you are connected you just flip a switch and hang up. The computer does the rest. There are even some modems that do their own dialing.

Eventually home computers will have built-in modems. But now most modems are extra. They range in price from about one hundred dollars up to several hundred dollars. Before you buy one check carefully with your computer dealer. Make sure that the modem you buy is right for your computer. And that it is right for you. You want a piece of equipment that will do what you want it to do at a price you can afford.

But we are getting a bit ahead of ourselves. What would you want to do with a modem?

The first job that comes to mind would be to hook up to a national data bank. A data bank is a little bit like a regular bank. A regular bank stores money. A data bank stores data or information.

Huge amounts of information are stored in a data bank on magnetic tape or in other forms. Storing the information isn't so hard. Finding the information when it's needed is the hard part. And for that a data bank needs a big computer. Big computers are generally called mainframes. When it is called on, the big computer can locate and transmit information from anywhere in the data bank in microseconds.

The speed at which big computers can work is almost beyond our imaginations. At any one time the computer can have hundreds of requests for information coming in. It can work on them all—

one at a time—but so swiftly that the user very rarely notices any delay.

What sort of information can you get from a data bank? Practically any kind you want, because there are many specialized data bank services. Doctors can check the latest information on new drugs. Lawyers can get information on how certain cases were decided. Travel agents can find out about airline schedules. Businessmen can check the stock market.

You're probably not going to want any of the specialized data bank services. But you might be interested in one of the general purpose data bank networks. The two biggest are The Source, owned by *Reader's Digest,* and CompuServe. Both of these companies offer a whole variety of services. You can get the latest news and weather. You can play games. You can place ads or send messages to others who subscribe to the service. You can even buy things if you have a credit card.

Here's how one of the general purpose data banks works. First you have to make sure that your computer is properly set up—that is, that you have the correct modem. When you contact the data bank network you pay an entry fee. You are then given some instructions, a special phone number, an identification number and sometimes a password.

When you want to get "on line" with the network—that is, use it—you call the number and switch on the modem. Then you have to punch your ID number and password into the computer. If

everything has worked correctly you are then presented with a "menu." It's a listing of what the service offers—things like news, games, horoscopes, home shopping services, or electronic mail."

Once you make a choice from the main menu, you get a secondary menu. For news it could be local news, business news, or national news. There are lots of choices. Once you make a choice the information you want appears on your video screen. It won't be Dan Rather reading the news just for you. There won't be any pictures at all. There will just be words on the screen. But it will be the news you asked for.

Electronic mail is even more personal. You choose "mail" from your menu. Then you type in something like "Any messages for me?" If someone else on the network has a message for you, it will be flashed on the screen.

You can place ads to sell things. You can even place personal ads in order to meet people.

With one of the networks you not only have a lot of information at your command, you also have the services of a big, powerful computer. For example, you can play very sophisticated games. They are the kind of games that you would never be able to run on your simple home computer—unless it was connected to a network.

It all sounds like a lot of fun. And it is! But there is one big, big drawback. The cost. Using one of these general purpose networks isn't cheap. First there is the cost of the modem. We already talked

about that. Then the services have an entry fee. That can be up to $100. But the real expense is the per-hour charge. That charge begins at about $6.00 an hour for use in non-peak hours, usually late at night or early in the morning. The price goes up for peak daytime hours—way up. There is also a monthly service charge or a monthly minimum charge whether you use the service or not.

If you live in a large city the phone time won't cost you more than the price of a local call. If you don't live in a large city you have to add the cost of a long distance call to one of the network's city centers.

Time sure flies when you're having fun. And if you're having fun using one of the general service computer networks, money flies with it.

If you want to get the news, get a newspaper. If you want to get a message to someone you know, call them up. You can play plenty of great games without the network. It's a lot cheaper.

What we are saying is that before you get into one of these expensive data bank networks figure out if you can afford it. And if you really want it. Some large computer stores have one or more of these networks "on line." You may be able to get a look at it and try it out. Find out if it's really worth it— for you.

In addition to the big nationwide networks like The Source and CompuServe, there are hundreds of local computer networks. They are run by schools, computer clubs, or groups with special interests. Some of these networks are not much more than an

electronic bulletin board. You can put a message into the network. And you can get the messages put in by others.

Other local networks can give you access to different kinds of information. Some even allow you to use the computing power of a big computer right in your own home. Local networks cost something. But they are a lot cheaper than the big nationwide networks. If you're interested the best place to find out about local networks is through a local computer store.

There is an even more personal form of computer-to-computer information. If you have a friend who has a friendly computer—that is, a computer that matches yours—and you both have all the right equipment, then your computer can call his or her computer. The two computers can exchange information.

If you are interested in that kind of communication check out the possibilities before you buy your computer. Certainly check them out before you buy your modem.

Now you might think that this sort of computer-to-computer communication isn't very practical. It's a lot easier to pick up the phone and communicate the old-fashioned way—by talking. And if that's what you thought you'd be right. Communication between personal computers is still pretty much a gimmick. You do it because you want to, not because you need to.

As we said, the nationwide data banks aren't very practical for the ordinary home computer user either—yet.

But all that's going to change. In a few years computer communications may be the most important thing that you use your home computer for. The cost of data bank services will have to come down a lot before large numbers of people will use them. When that happens you will find it very practical to ask your computer for the weekend sports scores. You will be able to shop by computer. You will be able to tap an enormous library of computer games and play any one you want. And you will be able to send and receive most of your personal mail through your computer.

That day isn't here yet, but it will be soon. And if you learn how to use a computer for communications now you will be ready for the day when it arrives.

Computer-to-computer communication is already important in business. Computers in one part of an office or in a distant office regularly communicate with one another. And even employees who are not in the office at all use this form of communication.

One day you may pass a phone booth. Inside, a well-dressed man will be holding his briefcase up to the phone. No, he isn't crazy. He is just getting in touch with the home office through his portable personal computer.

CHAPTER 8

Turn Your Video Game
into a Computer

Okay, so the full function keyboard computers look very impressive. But does that mean you're supposed to throw out your wonderful ATARI 2600 VCS or your Mattel Intellivision game-playing unit? What about that great Odyssey system you bought just last year or the ColecoVision system you begged your parents to buy? Not only do you own one or the other of these little beauties but you have a mass of cartridges to go with them.

Take heart! You don't have to save your allowance for the next five years and replace everything. There's terrific hardware down the line for whatever system you've got, and better, more sophisticated games. The people who design video game systems are always looking ahead. They've designed loads of interesting new features to keep their systems up-to-date, to allow them to compete with the increasingly popular home computers.

Let's start with traditional video game features like controllers. Almost everybody is coming out with tougher, more responsive controllers. Let's start with ATARI's new Trak-Ball. Available in many arcade games, it brings 360-degree control to your home. You can get it whether you own an ATARI 2600 VCS or the advanced ATARI 5200 "supergame" system, which has glittering graphics.

For ATARI 2600 VCS owners the Proline joystick ought to make life a lot more interesting. It's designed for comfort and very quick response. The ATARI 2600 VCS remote control joystick allows you to play as far as twenty feet away from the television and still control game play, including setting and resetting the game. That gives you the chance to move around and have a lot more freedom when you play. And the real joy is that you get rid of some of those entangling wires. You can also save time and money by buying a joystick repair kit. It comes complete with all necessary replacement parts and easy instructions.

Besides three-and-one-half-inch-long joysticks, Mattel Electronics has another innovation in controllers. Their Intellivision II unit has detachable hand controllers. Odyssey has self-storing joysticks. ColecoVision has some wildly wicked controllers. The Roller Controller has a free rolling track ball. When you spin it the creatures in the game you are playing move in that direction—the faster you spin the ball, the faster they move. For their Super Game Module they've got Super Action Controllers which are so spectacular they look like you should be driving a racing car with them.

Speaking of modules, and that is just what we are about to do, there is a limit to how far any video game unit can go unless you add new parts to it. These parts, or modules as they are called, expand a system's capacity. Expand them enough and the systems begin to look an awful lot like real full function computers. Go one step farther and bring out advanced game-playing systems with modules and you'll feel as if you've crossed the border into official computer country.

To show you what we mean let's look at Odyssey. It has always been an excellent system, complete with keyboard. But now comes the Odyssey Command Center. That means even better graphics, a keyboard with typewriter-like keys, and a phone modem. There's also a speech and sound effects module called Odyssey Voice, and a module that lets you write your own programs.

If you're an Intellivision fan, well, Intellivision II does everything the original unit did and more. On to Intellivision III with outstanding graphics, dizzying color, and battery-operated hand controllers for super speed. The sound will be super, too. You can hook it up to your stereo. If listening to your Intellivision talk to you is your kind of fun you won't need to bother with a voice synthesis module. It's built in.

If all this isn't enough for you then consider the Intellivision Entertainment Computer System. Take Intellivision I or Intellivision II and add on. You start with an adapter which allows you to get a lot of other stuff like a keyboard. There's even a separate music keyboard. You can compose your own songs.
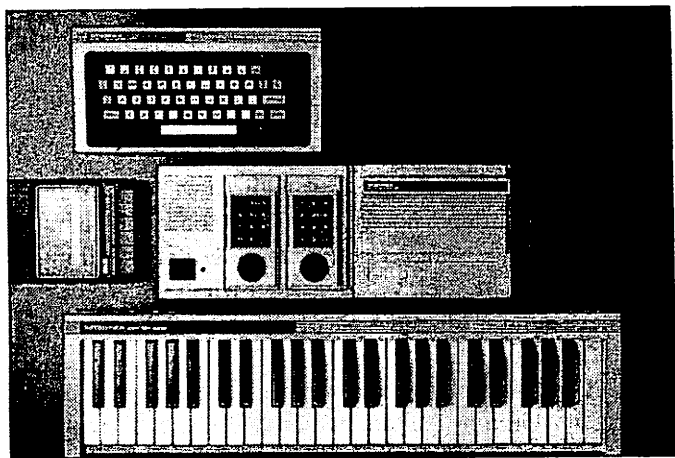
The Intellivision® Entertainment Computer System with computer keyboard and music synthesizer

Another attachment lets you write programs. Intellivision is even offering color TV sets at a discount.

As we already mentioned Coleco's new Adam computer system will use all of the popular ColecoVision cartridges, the joystick and other equipment. But according to Coleco you can also convert your present ColecoVision video game system into an Adam computer. The cost is about $400; that's $200 less than the cost of the basic Adam. Both do exactly the same thing.

Coleco is also marketing an adapter that lets you play cartridges compatible with the ATARI 2600 VCS. Mattel's Intellivision is offering its own variation of this kind of adapter. Mattel also designs software compatible with the ATARI 2600 VCS.

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Mattel calls this software M Network. Getting into the act, Coleco designs software for the ATARI 2600 VCS, too. The whole world seems to design cartridges that can be used with Atari. Coleco has designed another line of cartridges for Intellivision.

Coleco also has a sound module. Those things you see on the television screen when you're playing a game will now talk to you and the general sound effects will be more fun.

If you're looking for a bargain Coleco is introducing its Gemini system which will take cartridges compatible with the ATARI 2600 VCS. You can buy a voice module to go with it. The voice module is also available for the ATARI 2600 VCS itself and the Sears Video Arcade.

For Atari lovers, the ATARI 5200 is a great game-playing system. The controllers are a huge improvement over the ATARI 2600 VCS controllers, and the games are truly spectacular.
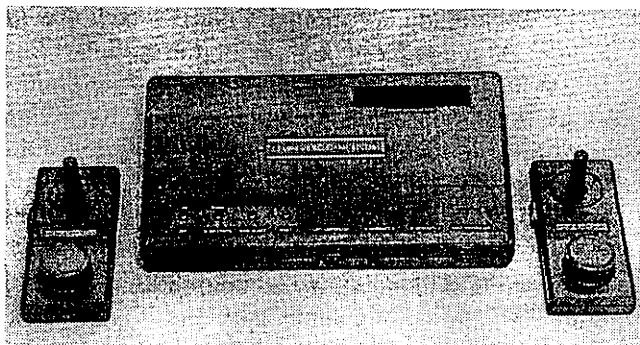
The Coleco Gemini Video Game System

Rich Tarbell

The ATARI 5200

Rich Tarbell

The ATARI 5200 Game Controller

So you've got a lot to look forward to: better sound, faster action, more flexibility in your choice of video game systems since you can often use your old cartridges with your new unit. Atari is even offering an adapter for their 5200 that will take ATARI 2600 VCS cartridges. A keyboard will be available for the ATARI 2600 VCS. There will be another keyboard, too, just for little kids. So switch or stay with any company. You're not likely to get stuck.

One important thing. Atari fans, you know you can move up to the ATARI 400 or 800 Home Computers if so inclined. Well, Mattel fans, Mattel Electronics has introduced the Aquarius™ Home Computer System, complete with modem, printer, etc. And Coleco has the new Adam computer.

But, with all the attachments coming out for the game-playing systems, you may decide to stick with what you've got, making an improvement now and then.

If you've never owned a video game system and are debating about whether to forge ahead and get a full computer—think! You have to choose what's best for you. But if you mainly like to play fast target games you could do a lot worse than to go for an advanced game-playing unit. You'll find the price is good and getting better. The graphics are great, and the fun hard to beat.

Go for it!

CHAPTER 9

Kid's Stuff

One way to go with computers is up. Get a more sophisticated system, try a more complicated level of software. All well and good but you shouldn't overlook the advantages of taking a step down now and then. Don't ignore all the computer goodies coming out for younger kids.

If you are a year or two older than the age range targeted for a particular game, so what? Is anybody ever too old to play checkers or watch cartoons on television? Same thing with software. A well-designed game can be a lot of fun if you're six or sixty. When it comes to computers and games beware of labels.

Of course, you may happen to be in just the right age range. The Atari Kid's Library is meant for children ages three to seven but the Atari Fun Club appeals to kids from seven to eleven. This is all kids' software, but it covers a broad age range.

There are companies like Spinnaker whose Face Maker game is aimed at those between four and twelve, quite a range. The game begins by showing you a blank face. You pick from different sets of eyes, noses, ears, and so forth until you've made a face. The game has other variations. You can make the face smile or frown. Meanwhile you're learning something about programming. Spinnaker designs computer games for Apple, Atari, and IBM.

This is going to be a big year for new games and new equipment slated for little kids. By and large the games will be warm and friendly. They'll also be funny. The world's most lovable cartoon characters will be popping up in cartridges soon. Though many will be message games, meaning they're meant to teach you something while they're entertaining you, don't worry. The fun goes in first.

One of the main reasons for all the new games is a company called Children's Computer Workshop, an offspring of Children's Television Workshop. You know about them. They're the people who brought you "Sesame Street" and "The Electric Company." A few years back they began designing games for the Computer Gallery at the Sesame Place entertainment parks. Maybe you've visited one of these parks. They're in Langhorne, Pennsylvania, and Dallas, Texas. If you did you probably played the games. They're so popular that they've been a smash hit on the home computer market, too.

If you own an Apple, or a Radio Shack computer, or an ATARI 2600 VCS or 5200, then you might want to take a peek at one of these games. If you

New computer programs from Apple computers and the Children's Television Workshop bring Muppet® characters into the home.

have a little brother or sister tell them about Children's Computer Workshop. Some of these games really are for the baby of the family. Lucky baby!

For the Radio Shack TRS-80 16K Color Home Computer there's a lot of software including *Grover*'s *Number Rover*, and *Ernie's Magic Shapes*. *Peanut Butter Panic* has two little Nutniks searching for moving stars to power their peanut

butter sandwich machine. Apple has *Ernie's Quiz*.
It asks questions like, "Guess which Muppet has
blue fur?" There's *Mix and Match* which lets you
invent your own batch of mixed Muppets. All of
these are available only on floppy disks.

Atari is offering *Grover's Music Maker*. You com-
pose songs and Grover dances. There's *Oscar's
Trash Race* and *Cookie Monster Munch*. To help
little kids get the most out of this new software
Atari has developed a special controller. It's a large
twelve-button keypad. The buttons are easy to
press, making the whole thing a super simple way

© 1983 Children's Computer Workshop

Cookie Monster is a pre-school game developed by the
Children's Computer Workshop for the ATARI 2600 VCS.

for little children to start using computers. Atari also plans to present games built around Snoopy and all the other wonderful Peanuts characters, and Mickey Mouse and the rest of the famous Disney crowd.

Every company has an eye on little kids this year. Coleco is offering *Play 'n Learn Games* for their Gemini video computer system, the ATARI 2600 VCS, and the Sears Video Arcade. The Berenstain Bears cartridge comes with three voice-tape cassettes. You can imagine how good the sound effects are. The Smurfs will be making their computer appearance soon, also on cartridges with voice tapes.

The Commodore VIC-20, one of the most popular home computer systems around, offers a Children's Series with charming games like *Mole Attack* and *The Sky Is Falling*. Their education series includes a game called *Home Babysitter* which teaches tots the alphabet and counting in a way they'll enjoy.

Texas Instruments offers loads of electronic stuff for little kids. Take their *Magic Wand Speaking Reader*. Kids can pass the wand over track-like bar codes called Talking Tracks and the Speaking Reader will live up to its name. It reads aloud to them. The system can be used with special books and board games. Again you'll find the Berenstain Bears, the Sesame Street characters, and the Disney characters in the middle of many of the adventures the wand reads. There's also a *Great Monster Party* with Count Dracula celebrating his 1000th birthday. It's part of Texas Instruments' Magic

Creatures Series of games and books also starring E.T. and Spiderman.

Also from Texas Instruments come *Speak and Spell, Speak and Math,* and *Speak and Read.* These are brightly colored electronic combination learning tools and toys. They're portable and come with earphones. There are program cartridges for *Speak and Spell* and for *Speak and Read,* as well as activity books. Try *The Ghost in the House* and *Who's Who at the Zoo.* (Developed in conjunction with Scott, Foresman and Company.)

Touch and Tell has interchangeable panels and cartridges. By pressing pictures on the panels children are taught the names of colors, shapes, and objects. Musical tones and sound effects add a lively note. In one case it features the voice of our favorite friend from outer space, E.T. The Little Professor is a calculator that helps you solve your math problems right up through fourth grade.

Mattel Electronics is very much in the running for the attention of little kids. The company has developed a new line of video games for children ages four to nine. Besides Intellivision these games are also available for the ATARI 2600 VCS. The emphasis is on familiar cartoon characters like Scooby-Doo, The Flintstones, Rocky and Bullwinkle, and the Kool-Aid pitcher man. You've got to help him fight off the thirsties. If you like The Masters of the Universe action figure toys you'll love the new video game based on them.

For children three to eight there's the Teach and Learn computer from Mattel, an electronic system

The Teach and Learn Computer® from Mattel Toys

that talks to you. If you've never had anything to do with computers this is a wonderful way to begin. The TLC is a portable computer that runs on batteries. It has a colorful panel that responds to your touch. You use activity disks and overlays with the panel. Little kids can learn stories, rhymes, and the alphabet. When they get a bit older there are maze games and reading readiness material. The Muppets are back again and so is a lot of good Sesame Street stuff.

On a more advanced level Mattel's Children's Discovery System provides a keyboard computer with 2K memory capacity for kids six to thirteen. It

even has a Liquid Crystal Display viewing screen. It, too, uses batteries. With an adapter it can also be plugged in. You can learn about composing music. You can draw electronically. And there are a lot of cartridges and activity books for it, including arcade action games and an introduction to writing your own programs. One of the most exciting things about this computer is that you can get games in which you use strategy, not just zap power, to win. Two of the games are being developed with the help of the famous Metropolitan Museum of Art. So hang in there. If you're not ready for the big-time computers yet you can begin to learn on an easier unit.

Courtesy of IBM

The Writing to Read Program for the IBM personal computer

And remember, if cartoons are for you then do check out the new software for little kids. Pac-Man's popularity was due to his charm as much as it was due to the mazes he went gobbling through. So don't be shy about buying gentle games with humorous characters. If you get a case of the giggles playing computer games then you're having fun for sure.

CHAPTER 10

A Hard Look at Software

Software is the stuff that tells the computer what to do. Software is the program, the electronic instructions for the computer. Before a computer can perform any task a program must be put in or loaded. Software tells the computer to do everything from playing Pac-Man to balancing a checkbook to correcting your spelling.

The problem with the word software is that when you get your hands on the software it usually doesn't feel soft. Never mind that. It's called software anyway.

For the home computer software comes in three main forms.

First there are the plug-in cartridges. The guts of the cartridge is a tiny silicon chip. The chip is enclosed in a plastic box that you stick into your computer. Most home computers have a place for plug-in cartridges. Even if you have never used a computer these cartridges will be familiar to you.
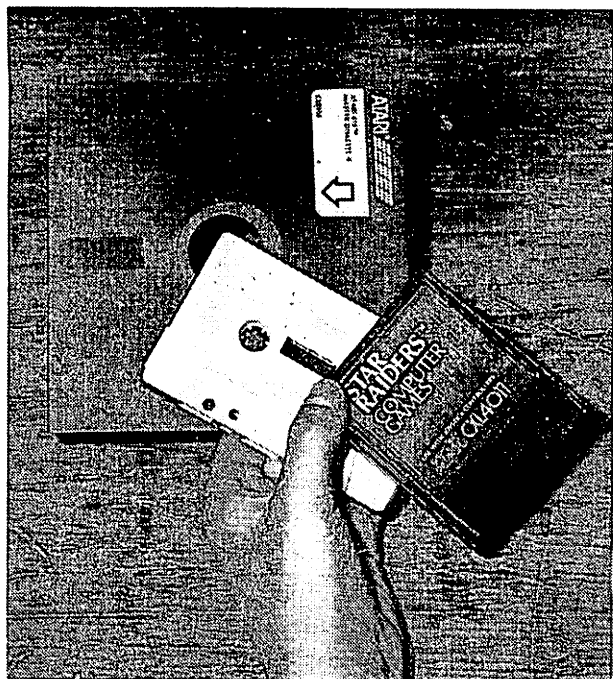
The three most popular forms of software: cartridge, cassette, and floppy disk

Cartridges are used in home video games. The computer cartridge may be a slightly different size and shape than the video game cartridge but basically they are the same.

Cartridges are very handy and sturdy. More of them are being used in computers all the time, particularly for game playing.

The drawback to the cartridge is that the chips contain a limited amount of data. So the cartridges are limited in the number of instructions they can

give to a computer. Even small computers are capable of doing a lot more than a plug-in cartridge can tell them to do.

Programs can also be stored on magnetic tape, just like the kind you use in your tape recorder. Until recently tape cassettes were the most commonly used method of storing software for the home computer.

Everybody's favorite form of software today is the floppy disk, or diskette. Floppy disk is a wonderful name. The disk is cute, too. It looks like a little phonograph record. This software really is soft or at least flexible. That's why it's called floppy. But don't squeeze or bend the floppy disk. Data is stored on the disk's surface in a magnetic coating. It's easily damaged. The floppy disk is so delicate that you never take it out of its cardboard sleeve. The computer "reads" the information through holes in the sleeve.

Those are the main forms of storing software. Now let's look at some of the programs this software contains.

There are, of course, the games. But those will be discussed in detail in later chapters.

Some of the simplest programs are those that just allow you to find information. An example of this kind of program is *This is Today,* for Mattel's new Aquarius computer system.

It works this way. Load the program. Punch in a date. Information about the day will then appear on the video display. There will be a list of historical events that occurred on that day. You will be told

how many days have passed in the year, and how many are left. There will be a daily horoscope, and a new word to learn for the day.

Another simple program from Mattel is *Hints from Heloise*. This is a program based on the popular newspaper column. You punch in a problem, such as ink stains. Heloise's solution to that problem will appear on the screen.

In these programs the computer is acting as a reference book. In other programs you can have a computer that acts as a personal file or record keeper. Atari has a program called the *Home Filing Manager*. This is a program that allows you to put information into it. You can put in lists of addresses and phone numbers, important dates such as holidays and birthdays, recipes—whatever you want. You can change this information any time you wish. And you can call it up at any time, just by typing simple instructions. Practically every home computer offers a similar sort of program.

Some programs are a little more sophisticated. They not only allow the computer to store data, but also to do something with the information. There are a lot of budget and tax programs. You enter the amount of money. The computer then adds or subtracts or does whatever operation is necessary.

Some computer manufacturers are really big on educational programs. Basically educational computer programs work this way. The computer asks a question. You punch in the answer and the computer tells you if you are right or wrong. Sounds boring, and it could be. But most educational pro-

grams disguise their teaching in a variety of clever, entertaining ways.

For little kids learning the alphabet, Atari has a program called *My First Alphabet*. The computer shows letters and colorful pictures. It plays the alphabet song. And there is a clown who smiles when he is given the right answer and frowns when the answer is wrong.

A lot of educational programs, particularly those for very young kids, are disguised as games. The Children's Television Workshop, creators of "Sesame Street," have been deeply involved in creating these kinds of programs. Other cartoon and TV favorites are being used to sugarcoat educational programs too.

But it isn't all Muppets and Disney. There are programs to teach languages like French, German, Spanish, and Italian. These programs offer spoken words as well as written words and pictures. There are programs that teach touch typing or speed reading or the basics of musical composition.

And there are lots and lots of programs that teach you how to use a computer and how to write programs. Most of the ones about writing programs teach a very simple computer language: either BASIC, the most widely used language; or LOGO, a new and even simpler computer language. There are also programs that teach you to make pictures with your computer.
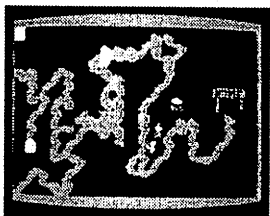
These are some of the really simple programs available for the home computer. Most of these programs can be run without any special training.
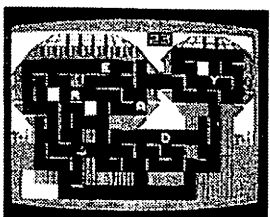
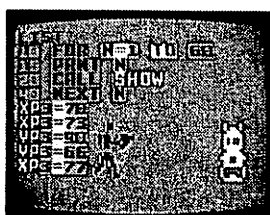# INTELLIVISION® Entertainment Computer System

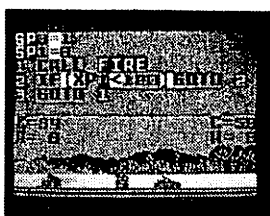## Education
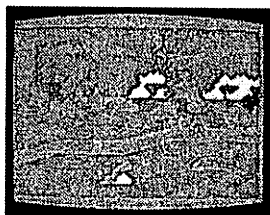
Number Jumble™
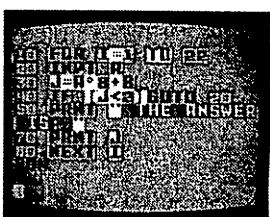

The Flintstones* Keyboard Fun*

Ways With Words™

Basic Programming

Game Maker*

Mr. BASIC Meets 'Bits 'N' Bytes'*

Basic Programmer*
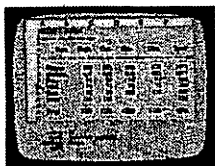
AQUARIUS™ Home Computer System Software

Aquarius LOGO
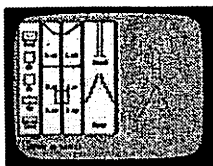
FinForm™

FileForm™

Hints from Heloise™+
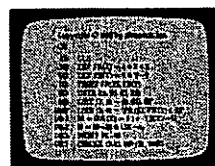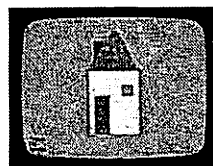
Extended Basic*
(This product is subject
to FCC rules and any
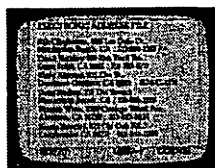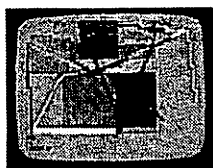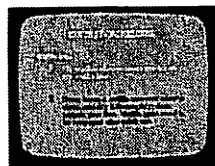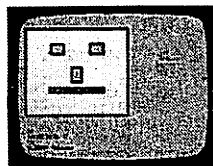shipment and delivery
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Once you get into computing you will find that there are programs that will allow you to do more—lots more. There are programs that will help you do your math and science homework—no matter how hard it is.

And then there are the programs for word processing. With a word processing program and the proper peripherals you will be able to type a report into the computer. You will be able to take out words and paragraphs whenever and wherever you wish. You can even have the computer check your spelling and count the number of words in the report. Then you can push a button and the report will be typed out perfectly.

You may not be able to do all of that with a simple, inexpensive computer. But someday you will probably use a computer that can do word processing properly. You can start learning how to do word processing right now, no matter what kind of a computer you have.

The amount of software available for today's home computer is staggering. That amount is going to become even more amazing in the next few years.

CHAPTER 11

Where the Action Is

Zap games, sports games, strategy games. It seems like there are trillions of games. New software manufacturers are popping up every day and the choice is mind-boggling. All of these games come under the heading of action games, or arcade-style games.

Established software manufacturers are expanding. Mattel Electronics, maker of Intellivision, for example, has announced it's going to develop games for IBM and Apple.

It's a very competitive time in the computer world and what's going on is enough to make you dizzy. Are you a fan of a particular game? Well, there's probably a club you can join. Before, when you bought a cartridge you just got a cartridge. Now, you may very well wind up with a clue-filled comic book inside the box, or a poster, or an invitation to enter a contest. You'll even be getting discount coupons one of these days. It seems al-

most certain that the price of these games will drop too.

Among the many new kinds of software on the way are games based on television game shows, and games starring every cartoon character, monster, or creature from mythology you ever dreamed of. One company, Data Age, has come up with a game for the ATARI 2600 VCS (the basic Atari video game system) called *Journey Escape*, based on the rock group Journey. It's a delightful escape game where you lead (or try to lead) the five Journey band members through a crowd of wild groupies, promoters, and photographers. You make your dash to Journey music.

As to the availability of games, well, lots of the really popular ones will be produced for a variety of systems. If, like most of us, you fell in love with Imagic's *Demon Attack*, named Video Game of the Year in 1982 by *Electronic Games* magazine, then you'll be happy to know that the splitting birds are on the increase. Look for versions of the game compatible with the Commodore VIC-20, Odyssey, the ATARI 400 and 800 Home Computers, as well as the ATARI 2600 VCS and Mattel's Intellivision. Imagic has a lot of other good games as well, including *Dragonfire* for the ATARI 2600 VCS. We played it and loved it. The dragon is a fast-moving fire-breathing beast, who comes in a rainbow of different colors.

Most popular games will be appearing in home video game and home computer versions, sometimes several of each. As we said, it's enough to make you dizzy.

The VIC-20 certainly doesn't lack for games. A lot of super stuff of every variety is produced for the Commodore Computer. Their action-type games include *Gorf* with its evil robot fleet, *Super Alien, Cosmic Cruncher,* and an underwater attack game, *Sea Wolf. Slither* and *Super Slither,* a two-games-in-one, beat-the-clock cassette tape program, will keep you occupied.

If you own a Texas Instruments Home Computer and enjoy classic games, the kind that were around before computers, then try *Othello.* You'll find that what works in a board game works on a computer. *TI Invaders* forces you to fight off an attack of creatures from outer space. *Car Wars* is a racing game. *Football* is football and it's based on actual pro ball statistics. You pick the plays. *Alpiner* has you climbing mountains inhabited by the Abominable Snowman. And if it's a dull day go *Hunt the Wumpus.* But be careful in those caverns and tunnels. After all, you know Wumpuses. You can't trust 'em.

Mattel Electronics is making sure that its new home computer system, Aquarius, is well supplied with good games. A number have been adapted from Intellivision. Aquarius will have its own *Burger Time,* based on the arcade game. You run through a maze pursued by hot dogs and pickles. There's *Tron of the Deadly Discs,* based on Tron of the Disney movie, and *Advanced Dungeons and Dragons.* You can use either the keyboard or hand controllers on the Aquarius Mini Expander to play.

There are a lot of new games for the basic Intellivision system, too. When you play *Sharp Shot* you

can take aim at a lot of different targets, including maze monsters. *Mystic Castle* is a medieval fantasy game complete with castles and dragons. *Arctic Squares* turns you into a penguin trying to escape from a nasty polar bear, among other beasts. Mattel, always noted for sports games, has a winner in *All-Star Baseball*. Swing away at curves or fastballs. Steal second if you can. But watch out for those really great fielders.

Odyssey has *Turtles*, based on the arcade game. The turtles have to find their babies and get them home. Not an easy task when up against beetles. Get ready to debug beetles. The game will keep track of high score and you'll love the sound effects.

Take heed, Odyssey addicts. In the new home video game *Killer Bees* you will have a lot to contend with. Earth has been invaded by Beebots from an alien insect civilization. They've brought killer bee warriors. For mere mortals to beat them the hive mind of earth bees must be controlled. Who does the controlling? You and your friends as you play the game. Shades of golden oldie sci-fi films.

Own a Timex/Sinclair? Try to solve *The Cube Game*. When you feel up to the See-thru cube give it a go. But don't scream when you get frustrated. If you like a good maze game you'll want *Grimm's Fairy Tales,* featuring a trapped young prince, life crystals and sacred stones. It's nice to realize you won't have to hock your bike to buy the software for Timex/Sinclair. It's incredibly reasonable in price.

TURTLES!

All the action and excitement of the superhit arcade game!

VOICE ENHANCED!!

CHALLENGER ⊜ SERIES

Courtesy NAP Consumer Electronics—Odyssey brand

Spectravideo designs software for the ATARI 2600 VCS, ATARI 400 and 800 Computers, the Commodore VIC-20, and Texas Instruments' 99/4A. Soon they'll be coming out with games for ColecoVision, the Commodore 64 and Mattel's Aquarius. They're introducing a 3-D video game

called *Lortex*. While wearing special 3-D glasses you maneuver your shuttle through meteor showers and zap the enemy. The 3-D effects have just entered the action game market. But it looks as if they will be very popular.

Sector Alpha introduces what the company calls Spectra-Sound, software incorporating speech that doesn't require any extra computer hardware when you play it. Sorry, ATARI 2600 VCS owners, though Spectravideo makes a lot of good games for you their *Ape Escape, Gold Mine,* and *Cosmic Math* require computers.

So does *Space Eggs,* from Sirius Software. The game is available for the Apple II, ATARI 800 Home Computer, and soon will be out for the IBM Personal Computer and the VIC-20. Large, brightly colored eggs are floating through space. Better blast them. You do and that only makes things worse. Spiders hatch out of the eggs and if you defeat them, well, then there are Lips (yes, we said Lips), Wolves, and Fuzzballs.

Wayout, designed by Sirius for Apple, Atari, and Commodore 64, is a 3-D action maze game. You're given glasses and a compass and you're on your way. For the ATARI 400 and 800 Computers, VIC-20 and Commodore 64 Sirius offers *Fantastic Voyage*. You're in a submarine, reduced to a tiny size, and you're going to be injected into the bloodstream of a very sick person. You've got to survive onslaughts of antibodies and destroy a blood clot near the brain. Ready for this interesting adventure? It's based on an old sci-fi movie.

If you're a Tandy/Radio Shack enthusiast take note of *Castle Guard.* If you break the spell of doom you'll watch your enemy's castle sink into the ground. Get up the cliffs in *Canyon Climber* but look out for angry mountain goats and arrows aimed to destroy you. There's *Poltergeist,* based on the Steven Spielberg movie, and *Monster Maze* in which creatures can shoot through walls. Help!

Speaking of movies, 20th Century Fox is planning to bring out games based on *Alien, Porky's, 9 to 5,* and *M*A*S*H. The Earth Dies Screaming* (yes, there was such a movie) and *Flash Gordon* ought to keep you amused. For vegetarian mayhem how about *The Revenge of the Beefsteak Tomatoes?* Fans of really bad movies will always remember the classic *Attack of the Killer Tomatoes.*

Thanks to an expanded ROM memory cartridge Tiger Electronic Toys is offering *Miner 2049er* for the ATARI 2600 VCS. The game will have three different playing screens, proving that even basic game-playing systems are getting more sophisticated software. The company has gone into manufacturing games for the ATARI 400 and 800 Home Computers, the ATARI 5200 super video game system, Commodore VIC-20 and Texas Instruments' 99/4A. So keep an eye out for Tigervision's many exciting new games, like the arcade action thriller *Polaris.*

Take a look at home computer software from Thorn EMI while you're at it. If you like jigsaw puzzles, Thorn makes them for the ATARI 400 and 800 Home Computers. They have a range of other

kinds of games, too. Try *Submarine Commander* or *Jumbo Jet Pilot*. And don't despair if you don't have an Atari. They're bringing games out for the Commodore VIC-20 and Texas Instruments' 99/4A.

Brøderbund is an important software company you ought to know about. *David's Midnight Magic* was named 1983 Game of the Year by *Electronic Games* magazine. *Apple Panic* and *Choplifter* are hits. Now comes the 3-D action game *A.E.* for Apple II and ATARI 400 and 800 Home Computers. For the VIC-20, *Martian Raider* and *Shark Trap* will make their appearance. If you do have access to an IBM check Brøderbund out. They make software for them, too.

Happily, one of the companies we like best, Activision, is going to bring out games for ATARI Home Computers. Activision is known for their super software compatible with the Atari 2600 VCS and Mattel's Intellivision system. Their games are well designed and the graphics are glorious. Don't we all love *Pitfall?*

So, friends of the ATARI 2600 VCS, go to the store and ask to see: *Dolphin,* the beautiful undersea chase game; *Oink,* starring the three little pigs and the mean old wolf; *Sky Jinks; Spider Fighter;* and *River Raid,* where you're piloting a jet over a dangerous course. Better have good reflexes. Besides these games Activision presents *Robotank.* There's *Happy Trails,* compatible with Intellivision. And there's *Enduro.* You're racing a car at tremendous speeds, starting on a bright blue morning, then moving through snow, even winding your way in
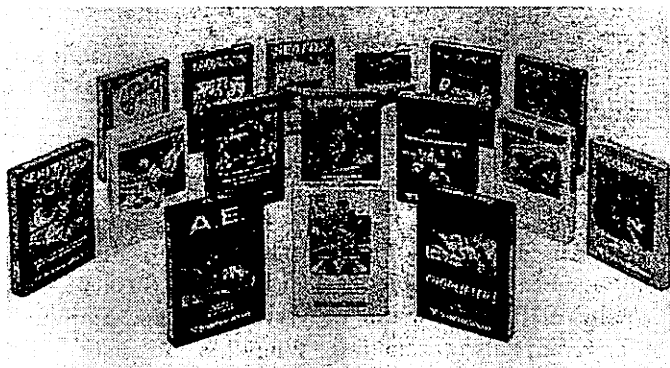
Software from Brøderbund

the dark. For a change of pace try *Keystone Kapers,* a mad romp through a 1920s department store.

If ColecoVision is your style they've got a lot of new cartridges. *Donkey Kong Junior, Buck Rogers on the Planet of Zoom, Frenzy, Time Pilot, Tac-Scan, War Games,* and *Front Line.* Like the new Super Action Controllers? Then get *Rocky Super Action Boxing, Super Action Football,* and *Super Action Baseball.* There's *Tarzan* and there's *Destruction Derby* for use with Coleco's Turbo Module #2 (a steering wheel), and lots, lots more. There's even a portable tabletop model of the great three-dimensional arcade game *Zaxxon.*

Direct from Atari itself for their home computers there are *Defender, Galaxian, Pac-Man, Centipede, Super Breakout, E.T. Phone Home,* and *Qix,* a wonderfully visual game. While trying to escape your enemy you create a colorful design in a box. Some of these games are also available for the ATARI 5200 and the graphics are so gorgeous you'll want to play for hours.

Atari is also going big on sports this year, especially for the ATARI 2600 VCS, with *Realsports Volleyball, Baseball,* and *Football*. Of course, ATARI 2600 VCS games are legion, including *Ms. Pac-Man, Phoenix, Vanguard,* and *Raiders of the Lost Ark*. The *Swordquest* series of cartridges, with clues and magical objects, will lead you through a medieval fantasy world of vivid graphics. *Space Dungeon* is also fascinating. Whew! What a list!

If that isn't enough for you there's a company called U.S. Games bringing out things like *Name This Game, Piece O Cake, Squeeze Box,* and software based on the Pink Panther character. All this plus sweepstakes. Want to win a prize?

A word to the wise. With so many games and so many companies to choose from you can't buy everything. Don't be taken in by fancy packaging. Learn something about a game before you get it. Talk to your friends. Find out what games they like. See if you can trade cartridges. Play a game a few times before you buy it. Seek out stores which let you practice before you plunk down your money.

If you can't find the particular game you want you can probably get something pretty close. Jump, run, shoot, duck, or hide—there are only so many variations on a theme so you're going to find a lot of repetition. Before you buy it make sure a game really has something new to offer—good graphics, maybe, or another new twist. It ought to be really funny or pretty or different or super-exciting to set it apart from the tons of software on the market. Don't just buy the same basic game over and over again.

You may decide you prefer one company over another. That's not a bad way to choose software. Perhaps some companies just come up with your kind of game a lot. A good game should be easy to learn but have advanced levels of difficulty to keep you challenged. And it ought to work as a whole, not be choppy. Remember, a well-designed game isn't just thrown together. You'll find that using some judgment pays off. A good game won't disappoint you or bore you quickly. Of course, in the end it's up to you. You have your own idea of what's fun, how hard you want to work to master a game, and how often you need some variety.

What you play will depend to a great extent on what hardware you own. But whether it's the basic ATARI 2600 VCS or a new IBM Personal Computer there will be games galore.

Made your choice? Okay, now get the computer working and grab a joystick. See that pile of cartridges? Just pick one, settle down with a snack, and let's go. Player number one, it's your turn.

CHAPTER 12

The World of Adventure Games

We love action games. Many a night you'll find us taking turns at ATARI'S *Centipede* game, clobbering the aggressive spider and mostly getting clobbered back. But if you want to know the truth, the best reason for having a home computer is to play games of a different kind altogether. These games are usually played on a keyboard. The software comes on a tape cassette or a floppy disk.

It all started for us when we discovered ATARI'S *Star Raiders* game. Granted, this is still a joystick type of game. It has a cartridge, not a disk, but when we turned on the power on the ATARI 800 Home Computer, we realized this was not strictly a zap game.

You get front and aft views of the sector of outer space you're passing through. You have to read a galactic chart, make decisions, plan strategy. It isn't easy to defeat the Zylon starships. It's not enough just to have quick reflexes. You've got to think.

There are a number of companies making out-of-the-ordinary games for super software lovers—or maybe we should say super software fanatics. These kinds of fans come in all shapes, sizes and ages. Not everybody who plays these games is a kid. Even computer engineers can't get enough of them. There are complicated war games in which you have to figure out maps, sports games in which you devise a strategy based on elaborate statistics, and there are role-playing fantasy games very similar to the legendary *Dungeons and Dragons*.

Unlike arcade action games these more advanced games don't depend on vivid graphics to dazzle you. Oh, some of them look pretty good but a lot of them aren't very colorful. The pictures provide you with clues or are useful in some other way.

A number of these games don't have any graphics at all. You don't need them. The computer gives you certain choices in words. You answer through your keyboard. In a way you're matching wits with the computer, trying to outsmart it. One good way to label this little contest between you and your high-tech machine is by the name "script adventure." That's what it is, isn't it? A very exciting and challenging adventure played out in script.

Let's take a look at a popular strategy game, *Castle Wolfenstein*. You are an Allied prisoner captured by the Nazis during World War II. World War II is a very common setting for strategy games just as the Middle Ages seem to be the choice for fantasy games. There are sixty rooms in *Castle Wolfenstein*. You have to outshoot or fool the

guards. The arrangement of the rooms changes every time you play the game. There are a lot of realistic touches such as guards speaking German. You'll need luck and brains to escape.

Wizardry is an important adventure game. Dwarves, elves, humans, creatures with special traits and magical gifts abound. On your quest you enter a dungeon. You press "F" on your keyboard and go forward. A lot of time is spent in adventure games wandering around, deciding which direction to choose. You have to be very careful not to get lost. Meanwhile the computer will keep you up to date about magic spells, your surroundings, how many injuries your group has taken, etc. Suddenly, despite all your caution you are attacked by monsters. Fortunately, this time at least, you are saved by a magic spell. But next time? You plod your way on.

If you make a really stupid move or try to quit, the computer might say "Are you sure you want to do that?" or "What's wrong?"

Get the idea? Clearly, this game is of a very different order than, say, Pac-Man.

Then there are games like *Deadline*. It's almost as if you and the computer are writing a mystery story together. Some people have called games like *Deadline* "participatory novels." You try to solve a mystery. You ask questions, but you're limited a bit by being forced to use only so many words and short sentences. The computer answers, feeding you clues. You follow suspects, eavesdrop, check the evidence. But you have to be very clever. Make

a mistake and the criminal eludes you or even commits another crime.

People who play adventure games are often members of small elite cliques who get together and discuss the games. Players become frenzied if they can't figure something out. They call the computer store that sold them the software, the company that manufactures it, even the designer if they can find him. And often they can. The computer almost seems like a person to them, poking fun at their mistakes, answering them sarcastically, stubbornly refusing to understand a given order because it doesn't know the words. We remember typing the word "swim" over and over again when we reached a pond we wanted to cross while playing our first script adventure game. Unfortunately, the computer didn't know "swim" and we had to wind up merely pressing the keys for "Go South." It was very frustrating.

If you think you would like to try a strategy or adventure game your best bet might be a trip to a computer store. They're interesting places, anyway. Stores do not always sell software for all kinds of computers so you might want to call first. If you've got a VIC-20 and the store only carries games for Apple, then you'll have to go elsewhere.

Some of the games come so beautifully packaged you'll be tempted to buy one on the spot. But you might want to hunt around a bit first, and maybe start playing a game. Talk to the salespeople if you can. If you've got an older brother or sister, or a friend who plays adventure games, take them shop-

ping with you. Or watch them play an adventure or strategy game on their own computers. Get their advice. This software can be very expensive.

Once you make your decision you'll find there's no end to the delightful possibilities of computer games. Take *Terry,* a user-designed game from the Atari (APX) Program Exchange. *Terry* is a not-overly-bright electronic psychotherapist of sorts. She is designed to chat with you, listen to your troubles, and make appropriate remarks. She provides an interesting diversion at parties.

Castle, Rev. 1.1, Sultan's Palace, and *Wizard's Revenge* are basic adventure games from Atari. These are maze games in which you're given descriptions of your surroundings. It's strictly text. No sound, color, graphics or motion. You make your way by entering one-letter commands like "U" for "Up." As you wander you'll come across objects to help you reach your goal or to provide you with protection. The computer will give you clues when you're stuck and there are secret words with great magical powers. Beware of traps.

Gridiron Glory, for your ATARI Home Computer, requires joysticks but it's a variation of football which takes planning and strategy. This football simulation game is played from the coach's viewpoint. You coach one of several teams, each programmed for different characteristics. You play against an opposing coach. The scoreboard keeps you up to date on your plays. You'd better keep an eye on the clock. You can write to the game's author for help when the going gets rough.

Owners of the Radio Shack TRS/80 might want to try *The Sands of Egypt*. This adventure game has good animated color graphics. You'll have to solve a mystery if you're to escape with the treasure. What are the secrets of the ancient tomb of Ra? Play the game and find out. If you can, that is.

Scott Adams adventure and strategy games offer a fascinating opportunity to those with a Commodore VIC-20. *In Pirate Cove* you try to reach Treasure Island and recover Long John Silver's lost treasures. *The Count* takes you to Transylvania. *Voodoo Castle* finds you trying to rescue Count Christo who has been placed under a terrible curse. Can you save him?

These games are also available for Texas Instruments, which offers *Adventureland, Mystery Fun House,* and *Ghost Town,* too. Each game will challenge your powers to reason things through logically and it may take hours or weeks for you to complete.

For the Apple II, Sirius Software presents *Dark Forest.* You scour the countryside searching for missing treasures. You must conquer territory to achieve your goal, facing trolls, magicians, and lots of other weird sorts. *The Blade of Blackpoole,* also from Sirius, sets you off on a quest for a sword of magic. There are a lot of challenging situations and colorful detailed graphics.

Brøderbund's classic galactic saga might interest you if you've got an Apple. The first episode finds you playing a strategy game involving military planning. Episode two has you making your fortune

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buying and selling your way through the galaxy. Episode three invites you to encourage or put down a revolution. The fourth episode has you joining a rebel leader and attacking the stronghold of a brutal prince.

Remember, adventure games come in several varieties. Some are a lot easier than others. Once hooked we predict you'll find them more fascinating than other kinds of computer games. They're games you can grow on, getting better and better at them, playing them long after you've abandoned other forms of software.

So even if they seem a little different from the games you're used to, don't pass them up. You'll be glad you tried them. Then you'll be able to play arcade action games for fast thrills, and strategy and adventure games for a slower and more intriguing kind of fun. You'll be getting the most out of your home computer.

A word of caution. We have found in testing script adventures, and talking to adventure-game enthusiasts, that there is a disturbingly large percentage of faulty disks being sold. You can get pretty angry if your $30 or $40 game doesn't work. But we have also found that the companies are usually very good about replacing the faulty disks. It's a nuisance, and we hope that there will be less of this problem in the future. However, if you get a bad disk, don't give up on it. Take it right back to the place where you bought it, and if they don't give you a new disk, write directly to the software company. You'll get action.

CHAPTER 13

Where Do We Go from Here?

The speed at which computers have been changing—and the speed at which they have been changing the world—is mind-boggling. Trying to predict what is going to happen in the future is a risky business at best.

But we'll give it a try.

Some predictions are pretty easy to make. Like this one:

In the future there will be more home computers than there are today. Right now the push is on to put a computer in every home, just like there is at least one TV set in every home.

Computers of the future will be even easier to operate. The trend toward simplicity is already well established. If everybody is going to own a computer then there will have to be computers that everybody can operate.

Computer prices will probably continue to fall. They have gone down dramatically already. This trend will continue. Yet people will probably be spending as much or more on computers in the future. People will be buying better and more powerful computers. And they will probably be buying computers that have many peripherals, such as video monitors, already built in. One of the most annoying things about so many of today's home computers is all those wires and little boxes that clutter up the room. In the future all you will have to do is turn on your computer. No need to find out if anyone wants to watch TV first.

Computer networks and data banks will become more widely used, and cheaper. That means you will have a world of information right at your fingertips.

You will be able to shop through your home computer. And pay bills through it as well.

Hopefully there will be standardization in the computer industry so that peripherals and software made for one computer can be used in others. That will make the home computer field less confusing and less expensive.

Programs will be simpler to use. There will be more canned programs available and they'll be easier to use. But some of today's popular programs probably won't be around in the future.

Just because a computer is able to do something, it is not necessarily the most efficient way to do that particular job. Take recipes for instance. It is probably better to keep your favorite recipes on file cards
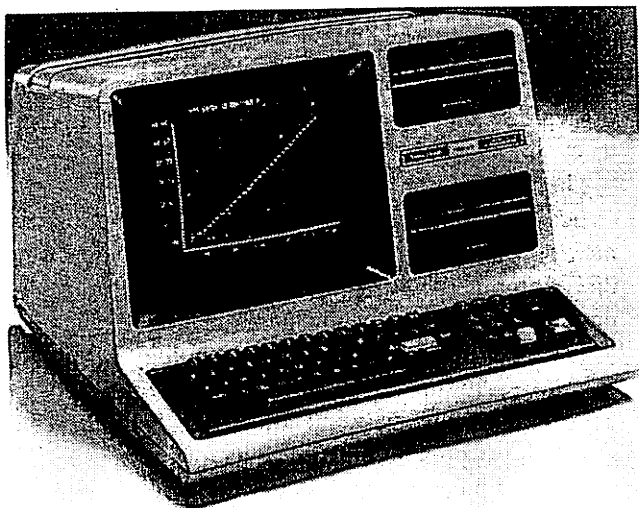
in a metal box than in a computer. After all, you don't keep your computer in the kitchen.

In the area of games we're guessing that the strategy and adventure games will become increasingly popular. The good old-fashioned quick-action zap games will always be with us. And they will continue to improve. But the real growth area will be the more sophisticated games that require thought and planning, not just quick reflexes.

There will be games that will create imaginary worlds in which players will be involved for weeks or months. The graphics for these games will be better. And they will be a more important part of the adventure. There will be games that require teamwork, or which are played against another individual or team, not just against the computer.

Games will also increasingly involve a combination of strategy and quick action—just like a real adventure.

Then there is the laser-optical disk. The laser-optical disk is used to store pictures. You can buy movies recorded on laser-optical disks. The laser disk combined with the computer will produce a powerful and amazing new game-playing machine.

The first fruits of this new technology began to appear early in 1983. There were some sports games using real baseball and football films. The game player punched instructions for plays or strategy into the computer. The results were shown on the TV screen with the real films.

Games of this sort are still very new. But in the not-too-distant future we can easily imagine adventure games with the action displayed in films using live actors. The choice the player makes will determine the scene that is shown. Indeed, a murder mystery game of this type is already on the market. And perhaps the action will be seen in 3-D.

And one day we will have real 3-D, so you can throw away those annoying glasses.

Those are a few fairly modest guesses about what will happen with home computers over the next few years.

One thing we can say with certainty. The home computer is here to stay, and it's going to be a lot of fun.

CHAPTER 14

How to Keep Up

If the world of computers is changing so quickly how can you keep up? How can you know what's new and what's coming?

A good place to start is your local computer store if you are lucky enough to live near a good one. Computer stores often become more than places to sell computers. They are hangouts for computer buffs.

In the stores that we visited we found the salespeople knowledgeable and very helpful. Many of them obviously loved computers. They didn't just want to sell you something—they wanted you to share their enthusiasm.

The stores also had a lot of catalogs and other information that hardware and software companies put out about their new products.

When you own a particular type of computer the company that made it may publish a regular magazine or newsletter. Or an independent publisher

may put out such a magazine or newsletter. Such a publication should keep you up to date on the latest developments such as new software, etc. Guess what computer the magazine *Apple Orchard* is written for?

There are also loads of general magazines about computers. More seem to be appearing every month. They have names like *Popular Computing* and *Byte*. Quite frankly most of these magazines are going to be way over the head of the beginner. They are just too technical.

Two new magazines aimed at beginners are:

Enter
The Children's Television Workshop
1 Lincoln Plaza
New York, NY 10023

CompuKids
P.O. Box 975
Sedalia, MO 65301

Two other computer magazines have regular features aimed at beginners. They are:

Compute!
Small Systems Service, Inc.
P.O. Box 5406
Greensboro, NC 27403

80 Micro
80 Pine St.
Petersborough, NH 03458

And for the game player there is the charming and informative:

Electronic Games
235 Park Avenue South
New York, NY 10013

Computer manufacturers can be very helpful and generous with information. The major manufacturers of small computers mentioned in this book are:

Apple Computer
10260 Bandley Drive
Cupertino, CA 95014

Atari
1265 Borregas Avenue
Sunnyvale, CA 94086

Commodore Computer Systems Group
487 Devon Park Drive
Wayne, PA 19087

Mattel Electronics
5150 Rosecrans Avenue
Hawthorne, CA 90250

Radio Shack
Fort Worth, TX 78102

Texas Instruments
P.O. Box 1058 Ms 5849
Lubbock, TX 79408

Timex Computer Corp.
P.O. Box 2653
Waterbury, CT 06725

The companies that make software are called
software publishers. Here are some of the leaders in
the game field:

Activision
2350 Bayshore Frontage Road
Mountain View, CA 94043

Brøderbund
1938 Fourth Street
San Rafael, CA 94901

Children's Computer Workshop
1 Lincoln Plaza
New York, NY 10023

Data Age
62 S. San Thomas Aquino Road
Campbell, CA 95008

Imagic
981 University Avenue
Los Gatos, CA 95030

Sirius Software
10364 Rockingham Drive
Sacramento, CA 95827

Spectravideo
39 W. 37th Street
New York, NY 10018

Spinnaker
215 First Street
Cambridge, MA 02142

Thorn EMI Video Programming Enterprises
1370 Avenue of the Americas
New York, NY 10019

Tiger Electronics
909 Orchard
Mundelin, IL 60060

Twentieth Century Fox
Fox Video Game
P.O. Box 794
Saratoga, CA 95071

U.S. Games
1515 Wyatt Drive
Santa Clara, CA 95954

And finally here are the addresses of the two
major data bank networks:

CompuServe
Tandy Corporation
Fort Worth, TX 76102

The Source
1616 Anderson Road
McLean, VA 22102

ABOUT THE AUTHORS

SUSAN and DANIEL COHEN met in Chicago, Illinois, and have been married twenty-five years. Mr. Cohen has a degree in journalism from the University of Illinois, and Mrs. Cohen has a master's degree in social work from Adelphi University. Both are writers. Daniel Cohen's books are popular with young readers and reviewers alike. A former managing editor of *Science Digest,* Mr. Cohen has written extensively on science topics including supernatural occurrences and the occult. He is a frequent lecturer at college campuses throughout the United States and Canada, and has discussed his ideas and interests on radio and television. Mr. Cohen's first book, *Myths of the Space Age,* was published in 1967, and since then he has written more than eighty adults' and children's books—several of which have won awards.

Susan Cohen has published eleven adult romances. But she also loves video games and did most of the research for her husband's book, *Video Games,* available from Archway Paperbacks. She has expanded that interest in video games to include personal computers, and therefore decided to collaborate with her husband on *The Kid's Guide to Home Computers*.

Mr. and Mrs. Cohen have a daughter, Theodora, and live with several dogs and cats in Port Jervis, New York.

COMPUTERS ARE FOR KIDS—
AND FOR FUN AND GAMES!

Now, you can have loads of fun
with your own home computer. Today
computers are cheaper than
ever, simple to understand and easy to
use. You can even make up your
very own games! This fact-packed
guide will show you how to:

• turn your video game into a computer
• hook your computer into a
nationwide databank—for all kinds
of information
• find out what's hot in hardware
and software
• play all the exciting adventure and
action games

Find out what's available now—
and what's coming up soon—in the
amazing world of home
computers—designed just for you!

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